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THE LESSONS OF FOLKLORE

By J. W. POWELL.

The study of folklore is the study of superstitions. Superstitions are opinions which stand over from a lower into a higher state of culture.

There are people who can move their ears at will; the lower animals can do this, but only a few human beings can wink their ears. Organs that are useful in lower species may remain in an imperfect and practically useless state in a more highly developed species; they are then called vestigial organs. As there are vestigial organs, so there are vestigial opinions. These vestigial opinions are commonly called superstitions. When we come to investigate vestigial opinions and treat them as objects of science, we no longer call them superstitions but we call them all folklore.

The science of folklore may be defined as the science of superstitions, or the science of vestigial opinions no longer held as valid. Yet such erroneous opinions that hold over from the days of greater ignorance to the era of modern scientific research are found to be of profound interest in the revelations which they make of the nature of superstitions themselves. We might

neglect them or seek to substitute for them valid opinions. However, science does not hesitate to investigate any question, and even the natural history of superstitions has come to be a profoundly interesting and instructive science.

Some years ago a movement was made in Europe and America to investigate superstitions themselves on the theory that they are valid. Societies were organized in London, Paris, Berlin, and New York for the purpose of determining whether or not there is substantial truth in error itself. This is the function of the Societies for Psychical Research, the purpose of which is to discover the truth of dreams, the validity of necromancy, and the reality of ghosts. I have a suspicion that the Societies for Psychical Research are rather instrumental in increasing superstitions than in dispelling them, and that we reap the natural fruit of these researches in the increased prevalence of such abnormal cults and arts as christian science, mind healing, spirit rapping, and slate juggling. Be this as it may, there is one result growing out of the modern Societies for Psychical Research which I hail with pleasure: In the transactions of these societies there is put on record a great body of superstitions, all of which are valuable material as folklore.

There is also a great body of material for use in folklore which is usually called mythology. Until of late years mythology has been studied rather for literary purposes, for it has been abundantly used in poetry, as the similitudes, allegories, and tropes of poetry and other kinds of polite literature are derived largely from mythology. From this standpoint mythology has been extensively investigated, and all its material is available for the purposes to which folklore is relegated.

In addition to these subordinate materials, the folklore students of the world are actively engaged in collecting material among all the people of the world. Already these researches are yielding abundant fruit, and the time has come when the facts of folklore can be put into orderly arrangement and the

principles discovered upon which folklore itself may be organized into a science. It is my purpose at this time to present a sketch or outline of this new science.

Remember it is the science of superstitions, and the science must deal with the fundamental errors of mankind (as the phenomena of nature have been interpreted by savage and barbaric peoples), and how these errors as vestigial phenomena have remained over in civilization and are still entertained. Of course the ignorant entertain them by wholesale; but it is not the ignorant alone who entertain superstitions. Superstitions are domiciled in many parlors, they are paraded on many platforms, they are worshiped in many temples, and they lurk even in scientific haunts and appear in scientific publications and are taught by scientific men. There is much folklore in this world, and sometimes it may be found in strange company.

The most fundamental elements of folklore may be set forth in an intelligible manner by explaining the erroneous opinions held by mankind in the stage of savagery about the cosmology of the visible world and about the world of ghosts. I shall therefore try to present the cosmology of savagery with some reference to its appearance in modern times in vestigial forms, and I shall try also to present the savage theory of ghosts and how this theory still remains in vestigial forms in the higher culture which we call civilization.

To the wildwood man who roams the prairie and haunts the forest the world is the grand domicile of beasts. Beasts are men, and men are but beasts. To his mind the beasts are rather superior to men. The beasts have more magical power and hence are oftentimes immeasurably superior to human beings. The savage admires the superiority of the beast and longs for his activities; he is forever contemplating the accomplishment of beasts—the wonders which they can perform—and is envious of their skill in what he supposes to be magic. He sees the trout dart from bank to bank in the brook and is amazed at its magical

powers, and from admiration he often proceeds to adoration. He sees the serpent glide over the rock, swift without feet and having the sting of death in his mouth; in this respect he seems superior to man. He sees the chameleon gliding along the boughs of trees in sport with rainbow hues, and is delighted with its magical skill. He sees the eagle sail from the cliff to the cloud region, at home in wonderland. He sees the lion walk forth to conquer with occult majesty. Yes, all of the animal world is magical and men are but degenerate animals. Inspired with wonder he is filled with adoration, and the beasts are gods. The world is thus the home of men and gods, and the gods are the beasts.

This home itself is a tabernacle of wonderful structure with the sky above and the earth beneath—the sky of solid crystal, the plane of the earth with mountains and valleys, with hills and plains, with forests and prairies, with rocks and deserts, with lakes and rivers. What a tent is this. The blue dome over the green earth, the mighty structure of the solid crystalline sky, a stupendous vault over a vast floor. This is the chamber of the world—a tent with a canopy of heaven and a floor of earth.

In this world sun and stars are but shining magical beasts that travel by appointed paths along the face of the sky. No hint of astronomy has been given to savagery. No scientific research has revealed the structure of the heavenly orbs. The sky as a dome and the earth as a floor constitute a chamber in which dwell the star beasts, the prowling beasts, the bird beasts, the reptile beasts, the fish beasts, and the insect beasts. In this magical temple they are engaged in magical activities. A vast chamber with the sky above and the earth beneath is the theater of a world of magical beings.

Some men there are—so thinks the savage—who also at times have magical powers. These are the shamans, as we often call them,—the priests. They call them *jossakeeds*, or by some other name, for there are a multitude of languages in savagery,

and every language has its name for these wonder-working men. All tribes have jossakeeds, and the savage believes that all tribes of beasts have jossakeeds; even the stars have jossakeeds.

These wonderful beasts, the stars, have to travel by appointed paths along the lower surface of the crystalline dome; but there are stars of greater magical powers—jossakeeds of flashing light—meteors of the sky. So lions have jossakeeds, so eagles have jossakeeds, so humming-birds have jossakeeds, so serpents have jossakeeds, so trees have jossakeeds, and so rocks have jossakeeds. The savage distinguishes between common people and priests, common people and wonder-makers; and trees, rocks, waters, animals, and stars are all common people and priests.

Now, we must see how this world is enlarged in the mind of the savage. There is still the dome above and the world below; but still as men travel from land to land and meet with tribe after tribe and return to tell of their journeyings, gradually the notions about the world are enlarged and men come to talk about the world in terms of direction. They speak of the world above and the world below in reference to the world here or the midworld, for every tribe believes itself to inhabit the center of the world; thus we have a zenith world, a midworld, and a nadir world. Then they speak of a world to the north, of a world to the south, of a world to the east, and of a world to the west, for men think of the world in terms of the cardinal points. Chained to this mode of thinking by the terms of language, the three worlds are multiplied and seven worlds are known: the midworld, the under world, the upper world, the north world, the south world, the east world, and the west world. All tribal peoples, savage and barbaric alike, believe in these seven worlds as departments or pavilions to the world of firmament and earth.

It is still a folk habit among civilized people to classify good and evil by regions. The good is from above and the evil is from below; the good belongs to heaven, the evil to hell. Let us expand this way of classifying things and consider every attribute

as belonging to or coming from one or another of the seven regions. Let us say that the gopher is proper to the lower world, the eagle proper to the sky. Let us classify all birds by regions and all prowling beasts by regions; let us classify trees by regions; let us classify colors by regions. Ah, there we have it, colors are yet classified by regions, and when we speak of seven colors we use the vestigial classification of savagery. Science no longer classifies colors in sevens; but folklore still classifies them in this manner, and this is the classification which has held over since tribal opinions were formed. In tribal society all objects and all attributes as properties or qualities are classified in this seven-fold manner, and every body and every attribute of a body is believed to be proper to some region, so that the idea of seven worlds is extended to all things, for everything is proper to some world. In savagery the folk think of bodies and properties in a cosmological scheme; just exactly as you think that a lie comes from hell and the truth from heaven, as though these qualities were proper or appropriate to a particular region. A man may know that a lie comes from the tongue and is proper to a false heart, yet from immemorial habit he will use the expression, "a lie from hell." As everyone who knows quite well that truth comes from correct reasoning may still affirm that some particular truth in which he is interested is a truth from heaven, so the savage considers that red is from the west world, is the color proper to a particular region. The red of the crest of the woodpecker he believes to be the red of the west world, which is the red sunset. So he will say the red of the west world is on the crest of the woodpecker, as you would say the light of the upper world irradiates the brow of the saint, or as you would say the anger of hell is on the face of the assassin. In like manner it must be understood to be universal in savagery to attribute all bodies, properties, and qualities severally to the cosmical regions.

It is the universal opinion in savagery that the world is a hollow chamber between a solid dome and a flat earth, and that in

this world there are seven regions, — the region where the tribe lives, which is spoken of as a midworld; a region above, or upper world; a region below, or under world; a region to the east, another to the west, one to the south, and one to the north, which are the cardinal worlds, and that everything in nature is assigned to one or the other of these worlds, and everything of which man may speak is proper to or belongs to some world and that it has been derived from that world. It is thus that the cosmology of savagery is the theory of its classification.

In the last stages of savagery and on to early civilization this cosmology is gradually changed into a new theory. The cardinal worlds become cardinal elements. In the primordial cosmology earth, soil, or dirt belongs to the midworld. In the same manner in savagery the air is supposed to be the breath of animals, and so the winds are supposed to come from the cardinal worlds and to be proper to the cardinal worlds; but when the atmosphere is discovered as something universally present and ambient over the surface of the earth, new concepts about the air spring up.

In the same way in savagery fire is proper to or comes from the south in the northern hemisphere, or from the north in the southern hemisphere; but in early civilization men gradually learn that fire is proper to combustible material, and they gradually acquire new concepts about it. Among savage people water belongs to the region of the direction in which the sea was known to the particular tribe; but gradually, in early civilization, men learn that the sea is everywhere beyond the land, and they learn that water is evaporated from the sea and falls upon the land, and gradually they acquire new opinions about water: so earth, air, fire, and water, that once were supposed to be regional things, are gradually transformed into elemental things, and men believe that everything is composed of four substances, — earth, air, fire, and water. They gradually give up their opinions about the cardinal worlds and speak now of cardinal substances, though they still adhere to the three worlds, — the upper world, the midworld, and

the lower world. This is the cosmology of early civilization, in which we find men speculating about the proportions in which earth, air, fire, and water are mixed in the different things. Thus the cardinal regions become cardinal elements. In savagery everything is attributed to some region; in early civilization everything but good and evil is attributed to elements, while good is still attributed to the upper world and evil to the lower world, and we still think of heaven as above and of hell as below — a survival from savagery.

Good comes from the mind of man, not from the clouds; from human purposes, not from heavenly regions. It is not an attribute of space, but an attribute of mind. In the same manner evil is proper to the mind; evil is in the soul. Evil is not devised in hell as a place; it is not an attribute of space, but it is an attribute of purpose. Hell and heaven are in the souls of men. Thinking men clearly understand this, though they may use language which implies that good and evil are properties of space. The ignorant misunderstand this language, and still believe that good is in heaven and evil in hell, and that by magic they come among men.

I say that the sun comes up, though I know that the earth turns down toward the east. This habit of expression does not deceive the astronomer who understands the rotation of the earth upon its axis; but the ignorant man may be deceived thereby. I say that the sun goes down, but the astronomer knows that the earth turns round, and he interprets the expression which I make as a symbol of the truth; but the ignorant man may be deceived. In like manner all folklore is ancient error still believed by the ignorant. Often the ancient errors still remain in the usages of language, but are properly interpreted by wise men. So wise men often say foolish things, but they understand them as symbols, while ignorant men believe them.

All of the bodies of the world — stars, waters, rocks, and plants — are animals, so the tribal man thinks. This doctrine is

hylozoism. Animals live in generations, so he believes that all bodies live in generations, that generation itself is something magical, and that magic is the cause of reproduction. The savage man is forever speculating how this or that thing is generated, or, as they say, Who is the mother of this thing? Who is the mother of the rock? Who is the mother of the rain? Who is the mother of the lake? In this manner they speak of the origin of things.

In barbarism the expression is changed. The barbarian asks, Who is the father of this thing? Who is the father of fire? Who is the father of water? Who is the father of the cloud? Who is the father of the sun? Not only do tribal men speak of bodies having mothers or fathers, but they speak of properties and qualities as having parents, for this is their theory of causation. In all speculation and in all controversy about causation, the cause is always considered as the parent and the effect as the child, so causes and effects are conceived in terms of generation or of parenthood and offspring. This is a good trope, but it is bad logic. That early civilization which has come down to us through the Greek language inherited this method of looking at cause and effect as if they were different generations of things. Having resolved the multitudinous properties of the world into simple concepts, they speculate as to how one produced the other and disagree about the ultimate parent. Some say number is the father of all things, others that form is the father of all things, others that force is the father of all things, and, finally, that mind is the father of all things. This controversy has been continued even unto the present time. The speculations on this matter are called metaphysic. In the literature of these speculations we find a large body of valuable material ready for the use of the folklore student.

As tribal man believes that all causation is magic and that causation is also magical generation, he universally believes in

some method of reincarnation. The same bodies appear again and again in different generations. Among the Aryan peoples of India this is systematized into a doctrine of reincarnation by which men are rewarded for the good and evil done in life by being transmuted into other species at death.

Metaphysic is the modern doctrine of metempsychosis; it is a learned explanation of magic; it is sometimes called philosophy, then it is a philosophy of the occult. There are two very distinct schools of metaphysic: the one believes that all material things are creations of the mind, that stars, rocks, and rivers are only thoughts; the other, that all material things are derived from force and that thoughts are only forces. The one believes in the dynamic origin of the universe, the other believes in the psychic origin of the universe. These two primitive doctrines of worlds, which are regions instead of stars, and of the origin of all bodies, properties, and qualities by magical generation, is the cosmology which comes to us from savagery. These doctrines are still believed as vestigial opinions, and we call such vestigial opinions folklore. Cosmology is thus a theory about the regions of the world and how things are created by magic.

Having thus briefly explained primeval cosmology, the primeval ghost theory must be set forth. Tribal man believes in ghosts, and this theory is called animism. The science of ethnology teaches the nature and origin of the ghost theory; that is, it discovers the nature of ghosts and explains how men come to believe in them. There are a good many people who believe in ghosts, the opinion being a survival from primitive society; but with tribal men the belief is universal.

We must first consider what ghosts are supposed to be and what they are supposed to do. I have already explained the primitive world as a domed firmament over a horizontal earth, and that all the bodies seen by men are supposed to inhabit this vaulted tabernacle—to dwell in the tent of the sky. The savage believes also that the stars are living bodies that pass along the

sky by appointed paths. He sees the heavenly orbs move along the crystalline surface above, every one by a definite way and every one at a definite time. So he sees the heavenly bodies as animals compelled to journey by appointed times and ways in obedience to some spell or magical influence; they cannot move at will, because they are under the power of magic. In the same manner trees and all plants are living beings struck motionless by magic and fixed to the soil. He believes that rocks are living beings rendered motionless by magic. All bodies of water are fixed to the earth in springs and lakes, but free to travel by appointed ways in streams. Every drop of water which is gathered in dew and every drop of rain is a living being under the spell of magic. Every one of the lower animals and every human being may move from place to place at his own will.

With this theory of the nature of the bodies found in the domed world the savage has a further theory that bodies and ghosts have distinct existences. Bodies are composed of solid substance; they can be touched, heard, and seen. On the other hand, ghosts have a tenuous or spectral existence and they are often called specters and sometimes haunts. Bodies do not have life, only ghosts have life. Bodies do not have mind, only ghosts have mind; however, ghosts dwell in bodies, though they may leave them at will. A ghost may choose its own body whenever it finds one unoccupied, and ghosts sometimes quarrel with one another if by chance they wish to inhabit the same body. Ghosts can travel in the world as thought journeys; ghosts can go to the moon and back again in twice the twinkling of an eye. Ghosts are magicians; they can do anything that is wonderful and occult, but they must be freed from their bodies in order to be wonder-makers. A ghost may cause a man to shout, and then instantaneously may go out among the rocks and repeat the call and come back into the man's body, or other ghosts may repeat his words. Such magical wonders the savage sees in every echo. All the

life and mind exhibited by animal and human bodies are attributed to their ghosts, for every body is inert and mindless.

Now we can understand what the *jossakeeds* are supposed to be. They are persons who can communicate with and have power to control the action of ghosts. It is only in the Algonquian languages that they are called *jossakeeds*. They are called *adawehé* in the Cherokee. In the hundreds of Amerind tongues there are an equal number of names by which they are known. Scientific men usually call them shamans, but by those who have some acquaintance with the savage tribes of America they are sometimes called medicine-men, and perhaps more often they are called priests. How they come to have these popular names is made plain when we understand the offices which they perform in tribal society. In every tribe in America there are societies called fraternities, as the members of such a society constitute a brotherhood. Among the ancient Greeks and Romans they were called *phratries*, as we call them fraternities.

Fraternities are organized to control ghosts, the ghosts being considered the active principle in every body. Ghosts control the production of all the fruits of plant bodies, and it is to them that appeal is made for natural fruits; they control the harvests of grass-seeds, nuts, and berries; they control the production of game, and the ghosts of the game birds and beasts are appealed to by these fraternities. In the same manner fraternities are organized to produce abundance of fish. In regions where insects are important portions of the daily food, fraternities are organized to secure their abundance. Grasshopper fraternities are formed in America, grub fraternities in Australia. There is no article of food which may not have its fraternity organized to secure its abundance. Especially in arid lands the relation between rainfall and food leads to the organization of fraternities for the production of rain.

In savage society, disease, even though it may be due to accident, is believed to be the work of ghosts. If a man stumbles he

is supposed to be deceived by a ghost, and if a man is wounded it is the ghost of the tomahawk to which the deed is attributed.

Among many tribes in America a cough is believed to be caused by insects, the toothache by worms, rheumatism by snakes, headache by birds. Every crudely distinguished symptom of disease has a name which is derived from the object whose ghost is supposed to cause the disease; thus there is the bear disease, the elk disease, the rabbit disease. Perhaps it would be a better translation of these terms to speak of them as the bear evil, the elk evil, the rabbit evil, the deer evil, the antelope evil, the turtle evil, the frog evil, the birch evil, the oak evil, the rock evil, the fire evil. Good and evil are clearly differentiated as magical powers, and witchcraft or sorcery is distinguished from shaman-craft or jossakeedcraft. Hence fraternities are organized to secure health and to prevent disease and injury.

War-clubs have ghosts. The power of the club is the ghost of the club. Spears have ghosts, and the ghosts of spears have eyes. The warrior who throws a spear must control its ghost. The ghost of the spear must have unerring aim, or the aim of the thrower is in vain. Arrows have ghosts, and arrows will not hit the mark unless their ghosts are controlled. Bows also have ghosts, and bows will fail unless their ghosts are nerved to the task.

It is thus that fraternities are organized to influence the ghosts of food, the ghosts of evil, and the ghosts of weapons.

The jossakeeds are the headmen or chiefs of the fraternities; hence they are sometimes called medicine-men, because sometimes medicine is their office; sometimes it is food, sometimes it is war power, sometimes it is hunting power, sometimes it is fishing power. A shaman is a person who has the power to control ghosts through magic for any or every purpose.

With this understanding of the nature of the fraternity and the chief of the fraternity as a jossakeed or shaman, we are prepared for the explanation of the methods by which the fraternities perform their tasks.

As ghosts are magical beings and perform their wonders by necromancy, so ghosts can be influenced or made to subserve human purposes by magic. Savage man finds his greatest delight in music and dancing. As his own ghost takes supreme pleasure in revelry, so, he reasons, other ghosts love music, dancing, and feasting. Hence festivals are organized by fraternities, and the leaders in these festivals are the shamans. A man is made a shaman because of his supposed skill in organizing the festivals and in conducting their exercises in the manner most pleasing to ghosts. Before the festivals take place, the shamans prepare themselves by various agencies. These methods of preparation are numerous when we consider all the tribes of America, and still more when we consider all the tribes of the world. It will therefore be impossible to set forth all of these preparations; time will not permit; but I will mention some that are common.

It is usual for the shamans to fast during one or more days before the festival takes place, and sometimes the most active participants in the festival take part in the fast. Fasting is almost a universal preparation for a festival among tribal peoples. Puking and purging are also extensively employed. It seems to be universal also that intoxicants are used either by eating or drinking them. This is the primeval habit out of which the modern custom of using intoxicating beverages has sprung. It is a survival of one of the shamanistic rites of savagery which has produced an appetite for intoxicants in the human race. After due preparation by the shaman and other celebrants, the people are assembled in the dance. The shaman usually makes instrumental music, while he may chant some fragments of folklore, parts of which the dancers may repeat in a refrain which is composed largely of unmeaning syllables. Men, women, and children all dance. Hoary-headed grandfathers; old, wrinkled, ugly hags; stalwart and battle-scarred men, earnest matrons, lithe youths, lissome lassies, and prattling children all dance, their naked, swart bodies shuffling and flitting in the torchlight that glints

among the trees and reveals weird shapes in the forest, while over all the stars twinkle and the moon sheds her weird light. The dancing is often interrupted by dramatic performances. The shaman or chief actor relates an appropriate myth, while the members of the fraternity aid him as *dramatis personæ*. Sometimes the performers are masked to represent animals or other mythic personages who are concerned in the myth. Besides masks other heraldic devices are used in ornamentation. The man who represents the bear may have a mask of the skin taken from the head of the bear, or he may be enveloped in a bearskin, or he may decorate his body with paintings to represent the bear or to represent parts of the bear. The man who represents the goose may have the skin of a wild goose stretched over his head, or he may be decorated with the feathers of a goose, or he may have goose emblems painted on his face and body. The man who represents the serpent may have snakes or snakeskins wound about his neck or body, or he may be variously ornamented with symbols of snakes; the actor who represents fire may flourish brands of fire; the actor who represents the sun may have the sun's face painted on his cheeks or his body. Strange and multifarious are the devices used to symbolize the characters which the actors impersonate. So the members of the fraternity are bedecked with masks and skins and feathers and tails and all manner of symbolic paraphernalia.

The leading shaman may intone the myth and himself take part in the acting, while the other members of the fraternity, in panoply of symbolism, perform acts and assume attitudes as they are suggested by the theme of the shaman, though they themselves may speak no words.

The most important ceremonies of every festival are those which have come to be known as altar rites. They are dramatic performances illustrated by altar symbols. The ceremony is a performance founded on some myth about the article of food which they desire or the ghosts which they wish to invoke. The

actors in the drama are the members of the fraternity, and the leading actors are the shamans, while in the dancing, music, and feasting all of the members of the tribe usually take part.

The altar may be a cleared space on the ground, before which the fraternity acts, or it may be elevated upon a table. The objects upon the altar are many, and from tribe to tribe they differ very greatly, though they may briefly be characterized. First upon the altar they place the object desired, the securing of which is the purpose of the fraternity. It may be corn. We know these festivals among the tribes of America as corn dances. They place ears of corn upon the table, and the shaman prays for corn; then they place vases of meal, and the shaman prays that they may have an abundance of meal; then they place sheets of bread upon the table. Among many of the tribes of North America these sheets of bread are as thin as wafers and are folded and piled one upon another. Then they place a casket of jewels on the altar—crystals of quartz, beads of turkis, carnelians, garnets, and other hard fragments of rock; then the shaman prays that the corn may be allowed to ripen and become as hard as the jewels upon the altar. Then they place birds carved of wood or modeled of clay or formed of cotton, all painted to resemble the most remarkable species of the region, and the shaman prays that the harvest may be so abundant that the birds will be made glad. There may be a special fraternity to bring rain; but sometimes the Corn clan will pray for rain, then a ewer or flagon of water will be placed upon the altar, and the shaman, with a brush made of the bright feathers of some bird, will sprinkle the water over the altar and pray that the rain may in like manner descend upon the earth and cause the corn to grow. Then they paint hieroglyphs of clouds upon tablets and stand them upon the altar, and the shaman prays that the clouds may come in due season to bring rain upon the earth.

Festivals are held at certain times of the year and in certain phases of the moon, and especially at certain times indicated by

the signs of the zodiac. Among the higher tribes calendars are kept for this purpose in which the days of the year are counted off by various hieroglyphic devices.

In conjunction with the symbolic numerals indicating the sign of the zodiac or period of the festival, the ceremonies are symbolized in many quaint ways. No field in ethnology is of greater interest than that of the study of ancient calendric symbols. It is these rites of the fraternities for game, harvest, and weather that are regulated by the calendar, because they must be conducted at the proper season.

The medicine rites are not calendric, but the time of their performance is determined mainly by the illness of some individual or by the prevalence of an epidemic. Of course they are not connected with festivals. Notwithstanding this, the shaman must prepare himself with fasting and vigil. Sometimes he resorts to puking and purging; often he takes some narcotic or stimulant which produces stupor, in which the nature and cause of the evil may be revealed. Sometimes he retires to the sweat house, or sudatory, where he is put *en rapport* with ghosts. Sometimes the medicine-man may be initiated by a festival with its ceremonies, the most important element of which consists in a device to produce that ecstasy which is necessary to ghost communication. When the medicine-man appears before the patient—the person possessed of an evil,—he, with the members of his fraternity, may first resort to an intoxicant or narcotic to produce not complete ecstasy but a favorable state of mind. Then he shakes his rattle, and the brethren and sisters dance, while he howls and produces weird ululations in which the fraternity take part at intervals as a refrain. Then he proceeds by various means to extract the evil or devil of which the patient is possessed. The most common practice in America is to extract the evil by sucking it from the body, and especially is it common to draw it out by suction from the top of the head. This may require many efforts and repeated resort to intoxicants with music and dancing.

It may require many days to eradicate the evil in this manner, especially if the patient is an important man in the tribe and the evil is attributed to some ghost controlled by a powerful enemy of the man. In the metaphysic of savagery no man dies a natural death; death is always produced by sorcery or evil magic, for there are bad shamans and good shamans. The good jossakeed finds it hard to contend with the bad jossakeed.

War and the implements of warfare lead to the organization of fraternities which have many rights. These are often festivals. Some are called, by people who witness them among the tribes of America, war dances; others are called scalp dances, because often the scalps of enemies are used as decorative emblems or as altar symbols. In these ceremonies the preparation of the celebrants is of great significance, for they submit themselves to self-inflicted torture, such as swinging on hooks thrust into the body and attached by ropes to a central post around which the members of the fraternity leap and shout and howl. They knock out their teeth, they cut gashes in their bodies, they cut off their fingers or toes, and they do many acts of torture, while with singing and leaping and howling they finally exhaust themselves and produce a state of ecstasy. In this state the ceremonies are believed to be most potent. Then come the dancing, singing, and charming of weapons, all of which is a highly ceremonial affair. This latter part consists of elaborate rites, the purpose of which is to inspire the ghosts of the weapons with anger at the foe.

The symbolism used on the altars at war festivals is very elaborate, for the ghosts of weapons have passions like human beings, and they see and hear like human beings. The weapons themselves are fashioned and decorated with such altar symbols to make them potent. The weapons themselves are potent because of their symbols, and symbolic weapons are constructed to be used on altars and to be used also by shamans who are leaders in the war and in the chase. It is a significant fact of the symbolism pertaining to weapons and implements of the chase, that it is

more highly developed than that of any other department of symbolism found among the Amerinds, as it testifies to the supreme interest which these people take in war and hunting. The symbolism of the weapons of tribal men is already becoming a science.

Thus tribal men believe in ghosts; they believe that ghosts can be controlled, and they organize societies for their control. These societies are called fraternities; they are found not only in America but wherever tribal men are found. We have sufficiently set forth the nature of ghosts as they are conceived to exist in the minds of tribal men, and we have also set forth the method pursued in tribal society to control them. It now remains for us to explain the origin of the notion of ghosts.

Ghosts first come from dreamland, then they come from ecstatic-land, then from hypnotic-land, then from intoxication-land, and finally they come from insanity-land. We cannot enter into the extensive subject of the psychology of the notion of ghosts. I have done that elsewhere. Here I can take only the time to show how ghosts come from dream visions, ecstatic visions, hypnotic visions, drunken visions, and insane visions. Science calls all such visions hallucinations, hence I must show that ghosts are the product of hallucinations.

Dreams we know to be real, for every human being has dreams and every rational human being knows it. At the same time he knows that the notions he entertains in dreams are fallacious. Dreams are realities, for there are such things as dreams; the notions of dreams are not realities, for they are hallucinations. The dream is a reality to which every man of common sense readily assents. The notions of dreams are fallacies to which every man of common sense also assents. Shall we believe in dream notions, or shall we believe in the concepts of waking life?

The notions of dream life are operations of the mind, just as the concepts of waking life are operations of the mind; they are

woven into the structure of the brain in the same manner, and hence they can be remembered in the same manner. Dream action in the mental constitution is less vivid than waking action, and yet there are not many of the thoughts which we produce in waking life that are afterward remembered. Dream thought occurs when the body is at rest, while waking thought occurs when the body is more active; and taking it altogether it is fair to say that waking thought is much more vivid than dream thought. Were this not the case, then we would have the same aptitude to be governed by dream thought as we are by waking thought, but waking life is controlled largely by the concepts developed in waking thought. Dream notions would have little effect on our waking activities were such notions not organized into a system to control waking action. This is accomplished in tribal life by the organization of fraternities; so that there is a special method of perpetuating the notions of dreams. There is abundant literature about dream visions, and the subject is undergoing special investigation by scientific methods.

The dreamer sees strange sights, and strange histories are enacted in his imagination. The dead appear and the living are seen as they appeared in years ago. The personages with which the dreamer was acquainted at different periods of life and at different places widely apart are associated in common transactions. The old soldier dreams of battlefields; not of a specific battlefield on which he fought, but of a battle in which some of the actors are of his immediate acquaintance. His wife is fighting by his side, his daughter is in the ranks of the enemy, or his father is slain. Perhaps feats are performed which in waking hours would cause unbounded astonishment, but which in his dream seem to be natural and commonplace; so dreams are often imaginary histories. As the dream goes on, transformations go on, perhaps by dissolving views. The father becomes a tree, the mother a spring, the daughter a rosebush, and the battlefield a meadow; perhaps the transformation seems not to be a

gradual change. Somehow the new scene replaces the old; but the change causes no astonishment; all seems natural and commonplace.

There is nothing in romance more marvelous than a dream. Listen for a moment to the dreams of *Alice in Wonderland*:

Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations in it, "and what is the use of a book," thought Alice, "without pictures or conversations?"

So she was considering in her own mind . . . whether the pleasure of making a daisy-chain would be worth the trouble of getting up and picking the daisies, when suddenly a white rabbit with pink eyes ran close by her.

There was nothing so *very* remarkable in that; nor did Alice think it so *very* much out of the way to hear the Rabbit say to itself, "Oh dear! Oh dear! I shall be too late!" . . . ; but when the Rabbit actually *took a watch out of its waistcoat-pocket*, and looked at it, and then hurried on, Alice started to her feet, for it flashed across her mind that she had never before seen a rabbit with either a waistcoat-pocket or a watch to take out of it, and, burning with curiosity, she ran across the field after it, and was just in time to see it pop down a large rabbit-hole under the hedge.

In another moment down went Alice after it, never once considering how in the world she was to get out again.

The rabbit-hole went straight on like a tunnel for some way, and then dipped suddenly down, so suddenly that Alice had not a moment to think about stopping herself before she found herself falling down what seemed to be a very deep well.

Either the well was very deep or she fell very slowly, for she had plenty of time as she went down to look about her, and to wonder what was going to happen next. First, she tried to look down and make out what she was coming to, but it was too dark to see anything: then she looked at the sides of the well, and noticed that they were filled with cupboards and bookshelves: here and there she saw maps and pictures hung upon pegs. She took down a jar from one of the shelves as she passed; it was labelled "ORANGE MARMALADE," but to her great disappointment it was empty: she did not like to drop the jar for fear of killing somebody underneath, so managed to put it into one of the cupboards as she fell past it.

"Well!" thought Alice to herself, "after such a fall as this, I shall think nothing of tumbling down stairs! How brave they'll all think me at home! Why, I would n't say anything about it, even if I fell off the top of the house!"

Down, down, down. Would the fall *never* come to an end? "I wonder how many miles I've fallen by this time?" she said aloud. "I must be getting somewhere near the centre of the earth. Let me see: that would be four thousand miles down, I think"— "—yes, that's about the right distance—but then I wonder what Latitude or Longitude I've got to?"

Presently she began again. "I wonder if I shall fall right *through* the earth! How funny it'll seem to come out among the people that walk with their heads downwards! The Antipathies, I think—" "—but I shall have to ask them what the name of the country is, you know. Please, Ma'am, is this New Zealand or Australia?" "And what an ignorant little girl she'll think me for asking! No it'll never do to ask: perhaps I shall see it written up somewhere."

Down, down, down. There was nothing else to do, so Alice soon began talking again. "Dinah'll miss me very much to-night, I should think!" (Dinah was the cat.) "I hope they'll remember her saucer of milk at tea-time. Dinah, my dear! I wish you were down here with me! There are no mice in the air, I'm afraid, but you might catch a bat, and that's very like a mouse, you know. But do cats eat bats, I wonder?" And here Alice began to get rather sleepy and went on saying to herself, in a dreamy sort of way, "Do cats eat bats? Do cats eat bats?" and sometimes, "Do bats eat cats?" for, you see, as she could n't answer either question, it did n't much matter which way she put it. She felt that she was dozing off, and had just begun to dream that she was walking hand in hand with Dinah, and was saying to her very earnestly, "Now, Dinah, tell me the truth: did you ever eat a bat?" when suddenly, thump! thump! down she came upon a heap of sticks and dry leaves, and the fall was over.

Alice was not a bit hurt, and she jumped up on to her feet in a moment: she looked up, but it was all dark overhead; before her was another long passage, and the White Rabbit was still in sight, hurrying down it. There was not a moment to be lost: away went Alice like the wind, and was just in time to hear it say, as it turned a corner, "Oh my ears and whiskers, how late it's getting!" She was close behind it when she turned the corner, but the Rabbit was no longer to be seen: she found herself in a long, low hall, which was lit up by a row of lamps hanging from the roof. There were doors all round the hall, but they

were all locked, and when Alice had been all the way down one side and up the other, trying every door, she walked sadly down the middle, wondering how she was ever to get out again.

Suddenly she came upon a little three-legged table, all made of solid glass; there was nothing on it but a tiny golden key, and Alice's first idea was that this might belong to one of the doors of the hall; but alas! either the locks were too large, or the key was too small, but at any rate it would not open any of them. However, on the second time round, she came upon a low curtain she had not noticed before, and behind it was a little door about fifteen inches high; she tried the little golden key in the lock and to her great delight it fitted!

Alice opened the door and found that it led into a small passage not much larger than a rat-hole; she knelt down and looked along the passage into the loveliest garden you ever saw. How she longed to get out of that dark hall, and wander about among those beds of bright flowers and those cool fountains, but she could not even get her head through the doorway; "and even if my head would go through," thought poor Alice, "it would be of very little use without my shoulders. Oh, how I wish I could shut up like a telescope! I think I could, if I only knew how to begin." For, you see, so many out-of-the-way things had happened lately that Alice had begun to think that very few things indeed were really impossible.

If we consider dreams to be omens and recall them to divine the future, this constant familiarity with them makes the absurd itself seem real. Then if we practice the methods of hallucination, visions become realities. Poets, philosophers, statesmen, warriors, and religious zealots are peculiarly liable to such visions, and to them visions are realities. One of the most common methods of producing visions is by crystal-gazing. When rational judgment is overturned and false judgments are made, the realm of ecstasy, like the realm of dreams, is a home of hallucinations. In civilization crystal-gazing is an art of mountebanks, but in the earlier stages of civilization men resorted habitually to the practice of ecstasy by a great variety of methods.

So hypnotism is a source of hallucination. In civilization it may be practiced as a curative agency, but mountebanks sometimes practice it for purposes of deception. In tribal society

hypnotism is a customary agency to secure communication with ghosts. In civilization intoxication has become a remedial agent and is universally practiced to relieve pain and to produce unconsciousness during surgical operations; but intoxicants and narcotics are used in savagery as an agency by which men may communicate with ghosts. Oftentimes disease subverts the intellectual faculties and men become insane, and they are treated for insanity as for other diseases; but in tribal society the insane are supposed to be possessed of foreign ghosts—that is, ghosts not proper to their bodies. So the realm of ghosts is the land of dreams, the land of ecstasy, the land of hypnotism, the land of intoxication, and the land of insanity. Ghost notions are produced by visions. To confound the notions of visions with the concepts of waking reality is to pass into the land of mystery—the uncanny realm.

It is thus that the study of folklore has come to be the most practical and valuable of all the sciences, for it reveals the origin and nature of superstitions and makes the grand scientific distinction between valid concepts and uncanny visions.

The habit of believing in the impossible, of expecting the absurd, and of attributing phenomena to the occult, gives rise to two classes of magical agencies which, from savagery to the highest stages of culture, have played important roles in the explanation of magic. These are the beliefs in mascots and taboos.

Those who dwell on the mysteries of life, especially as they are revealed in ecstasy, hypnotism, intoxication, and insanity, are forever looking for mascots or mysterious causes. Such occult agencies are sweet morsels to superstitious people, just as scientific men delight in the discovery of scientific facts. What a wonder it was to scientific men to discover that bones could be photographed through their covering of flesh! The discovery of the Roentgen rays was held to be so important that the discoverer was awarded a great meed of praise. But the potency of the left hind foot of a graveyard rabbit plucked in the dark of the moon

is held by superstitious people to be of more importance than the Röntgen rays. More people believe in mascots than believe in telephones, and those who believe in mascots believe that telephones are magical. In the same manner taboos perform wonderful magic feats in the notions of many persons. In savagery there are many taboos, and men must not do this thing nor that thing lest their enterprise should fail. Survival of taboos still exists; e.g., thirteen persons must not sit at the table lest one should die. So mascots and taboos still have their influence in civilized society.

I have already explained the origin of the seven regions or worlds existing in the notions of savagery, and how four of these, the cardinal regions, were transmuted into the cardinal substances—earth, air, fire, and water. I have also explained that still three of the regional worlds remain in folklore—earth, hell, and heaven. Then I have explained the nature of ghosts and how the notion of ghosts springs from dream visions, ecstatic visions, hypnotic visions, drunken visions, and insane visions, and have still further explained how magical causation still lives in folklore by pointing out the influence which mascots and taboos exert in society.

I have yet to point out one more source of folklore to which allusion has already been made. The habit of explaining mysterious phenomena from visions has developed a special learning or cult which is known as metaphysic. This I must now set forth. In so doing I shall show that the belief in magic still exists in very highly cultured quarters. Metaphysic is a system of explaining how the properties of bodies are generated one from another. In modern times there has come to be two very distinct schools of metaphysic—the one called idealism and the other materialism. The idealists believe that the properties of bodies are all generated from mind; the materialists believe that the properties of bodies are all generated from force.

A third school remain who believe that the psychic properties

of bodies and the physical properties of bodies are derived from distinct substances; the physical properties of bodies are derived from a substance that can be tasted, touched, felt, heard, and seen, while the psychical properties of bodies are derived from a tenuous or spectral substance which can be manifested to the senses of certain persons only under certain conditions. This third doctrine is the survival in modern times of the ancient doctrine of animism. It is only with idealism and materialism that we are here to deal.

On my table there lies a knife made by one of the ancient inhabitants of America from a bowlder of clay sandstone. I can break it into pieces, that is, dissect it into parts, and put these parts in different bottles, or I can analyze it into different substances and put these substances into different bottles. For simplicity's sake let us say that it is composed of oxygen, silicon, aluminum, hydrogen, and iron. By analysis I can separate these substances and put each one in a different bottle. This same aboriginal knife has properties; but I cannot separate them from the knife and put them into distinct bottles. I cannot dissect them into properties, nor can I analyze them into properties, and yet the properties are realities. While they are not discernible, they are still concomitant and may be considered severally, although they cannot exist severally. Bodies can be generated one from another, animals may be generated from other animals, plants may be generated from other plants, rocks may be generated from other rocks; but essential properties cannot be generated from other properties, affinity cannot be generated from persistence or causation, persistence cannot be generated from force, force cannot be generated from form, form cannot be generated from number. Properties cannot exist apart; although they are concomitant they can be considered severally. Ladd¹ says, "All the essential factors which belong to the conception of

¹ *A Theory of Reality*, New York, 1899.

a thing are harmoniously present to our cognitive experience in every concrete thing." In this he affirms that the essential properties of things are concomitant, and that one cannot exist without the other; and he goes on in many chapters of his new book to prove this concomitancy of properties and the impossibility of their dissolution. Some of the Greeks thought the property, which is the father or ancient (*δεξι*) of all others, to be number. This is the doctrine ascribed to Pythagoras. Plato thought the father or ancient of all properties to be form. Aristotle thought the ancient of all properties to be energy or force; others of the Greeks thought the ancient of all properties to be being. In modern times two schools have been developed—one which claims that the ancient of all properties is mind, the other that the ancient of all properties is force. Thus we have idealism and materialism, which are theories not of the origin of bodies by genesis one from another, but of the origin of properties by genesis one from another.

In the earlier controversies on this subject—and they have been many and bitter, for the opinions held about them are supposed to come from those regions which we call hell and heaven,—a peculiar theory of properties is taught. All bodies are supposed to be porous and to be composed of unknown and unknowable matter, and the properties are supposed to be held in their pores. This doctrine took on the most extreme notions about the nature of magic. The matter or substance of a body could give out an inexhaustible supply of these properties, or they could absorb an inexhaustible supply. Substance, or substrate, according to this theory, is endowed with magic as the inexhaustible cause of properties. The flint knife has number: it is many in one, but you cannot gather the knife into one bottle and the number into another. The same piece of quartzite has form, which is its structure and shape, but you cannot take its form and put it into a distinct bottle. The same fragment of rock has motion—the motion of the earth about its axis, the motion of the

earth about the sun, and that motion which we call heat,—but you cannot take this motion called force and put it in a distinct bottle. This same bit of rock has persistence, or being, or causation, but you cannot take this being away from the flint knife and put it by itself in a distinct bottle. The same bit of quartzite is composed of different chemical substances that have affinity one for another, but you cannot take this affinity away from the molecules of the knife and put it in a bottle by itself. Here we have five properties of things,—number, form, force, persistence, and affinity,—but they are inseparable. A survival of this doctrine existed in science up to the days of Newton, for he believed that heat, which is a mode of motion or force, could be indefinitely added to or taken out of a body. The greatest work of the greatest philosopher of time was marred by this superstition—a survival from an earlier day. His successors in scientific research have repudiated the doctrine. The same superstition that properties may be produced one from another in inexhaustible generations still exists, and the lore of these superstitions is called metaphysic; but there are two schools of metaphysic,—one believing that all other properties are generated by the psychic property, the other believing that all other properties are generated by the force property.

At one time in my life I believed in idealism, and for forty years I have been a constant reader of its literature. During all this time I have never ceased to search for a definition of idealism. I have forever been on the lookout for the standard concept of the theory, and from time to time I have tried to grasp the concept and express it in language. During the present year a great scholar has devoted two large volumes to the defense of idealism, and I find that there is involved in his new book a definition of idealism which is as good as any other that I have read, though it is not expressed in affirmative and concrete terms so that they can be quoted. I must therefore attempt this definition, premising that I obtain it from what

seems to be implied by James Ward in his voluminous exposition of the subject.¹

Idealism is a theory that all of the material objects of the universe, other than human beings, are created or generated by mind, and that human beings are the real things and all other things are but the concepts of human beings. There are no stars, but only human concepts of stars; there are no waters, but only human concepts of waters; there are no rocks, but only human concepts of rocks; there are no plants, but only human concepts of plants; there are no lower animals, but only human concepts of lower animals. However, on this point Ward is vague. Either he has not considered the subject, or has not committed himself to a doctrine of the reality of the lower animals. God and human beings are realities which manifest themselves to one another in perception and conception as ideas of the objective world.

He rejects the scientific use of the term phenomenon as a manifestation of objective reality, and adopts the use of the term as a manifestation of mind. He teaches that science is a method of expressing ideas; it is but a system of language and has no other significance than that of a system of language. There is no objective concrete world with which science deals; but there are ideas with which science deals, and the whole function of science is to reduce these ideas to their simplest expression. There is no objective standard of truth; there is only a subjective standard of opinion, and all scientific research is the attempt to formulate these opinions or ideas or concepts or perceptions in universal terms.

Science is only a device of language; mathematics is only a device of equations; chemistry is only a device of atoms; astronomy is only a device of worlds; geology is only a device of formations; botany is only a device of cells; biology is only a

¹ *Naturalism and Agnosticism*, New York, 1899.

device of organs. All of these devices are useful for linguistic purposes; they do not express objective reality, but only subjective ideas. The world is a realm of ideas and words. It is not a realm of objective real things. This is how I interpret idealism as expounded by James Ward and by all other idealists.

On the other hand materialism is a theory of the existence of the world as constituted of forces. This theory is perhaps best expounded by Boscovich as points of motion, not points in motion;—centers of motion, not centers in motion. There are no atoms or molecules in motion, but there are atoms or molecules of motion. There are no stars in motion, but there are stars of motion. There are no waters or gases in motion, but there are gases of motion. There are no rocks in motion, but there are rocks of motion. There are no plants in motion, but there are plants of motion. There are no animals in motion, but there are animals of motion. There are no thoughts that are the motions of brain particles, as there are no brain particles, for thoughts are motions themselves.

Usually it suits the logic of idealism to speak of forces as usually it suits the logic of materialism to speak of motions.

Idealism accuses all scientific men of being materialists, and it divides mankind into two groups, the good and the evil. The good are idealists and the evil are materialists. The idealists are from heaven and the materialists are from hell. Idealism accuses materialism of ignoring all values in the world; it forever seeks to belittle scientific research. Chemistry is only a controversy about words; astronomy is only a disputation about words; physics is only a disputation about words; geology is only a disputation about words; botany is only a disputation about words; and zoölogy is only a disputation about words.

Materialism accuses idealism, as being the enemy of science, of rejecting every scientific discovery until it can be translated into terms of idealism, being the great bulwark of ignorance and the fortress of superstition.

As idealism is interpreted by materialism the accusations are true, and as materialism is interpreted by idealism the accusations are true. Materialism is arrayed against religion, and idealism is arrayed against science.

Both idealism and materialism are fallacious because they both attempt to reduce all of the properties of bodies to one, and in so doing they transmute the realities of the world into magic and continue the superstitions of primeval culture. What these superstitions are we have attempted to set forth. The particular logic which is used by both parties is called dialectic. This logic consists in the use of words with more than one meaning, — the habit is universal as trope and upon it the beauty of literature largely depends. The origin of trope is found in the concomitancy of properties. The essentials of all properties are concomitant in every particle of the universe; so that when one property is discovered, then others may be assumed — the discovery of one implicates the existence of all. If we discover the property of number in a body, it implicates that there exists the property of form. If we discover the property of form, it implicates the property of force. If we discover the property of force, it implicates the property of causation. If we discover the property of causation, it implicates the property of affinity. One of these properties cannot exist without them all. This implication is a fundamental habit in psychology. When I taste an apple, I implicate its touch property, that is, its form. When I touch the apple, I implicate its force property, that it has weight, or that it has that motion which we call temperature, or that it has that motion which is common to all the objects of the earth. When I weigh the object in my hand by the sense of strain and discover the force property, I implicate the further property of causation, that it has the property of cause and effect; and when by my sense of causation I discover cause and effect in the object, I implicate that it is composed of particles held together by affinity.

Thus, when we cognize one property in a body, we recognize its other properties with which we are familiar, and this engenders the habit of figurate expression. The majority of words are used with figurate meanings; but we must not carry such meanings into logic; we must use terms with single meanings. This is the fundamental necessity of science. The fallacy of using words with different meanings in the same proposition of logic was pointed out long ago even by the Greeks and has been constantly referred to in modern systems of logic, and yet this is the primal fallacy of dialectic, or that method of reasoning which is used in metaphysic. It is the failure to distinguish figurate from fundamental meanings that constitutes the logical source of all the fallacies of metaphysic. I speak of a parallelogram of forces as if force itself were a property of form. This figure of speech is of daily use in the mathematical classroom, and it serves a good purpose in presenting the concepts of force by a diagrammatic method; but just as soon as you forget that it is a method of figurate expression, and apply it to the equations regularly developed in the higher mathematics, and talk of n dimensions of space instead of n dimensions of motion, you are in the realm of absurdity. N dimensions may be used in equations, but there is no such thing as n dimensions of space.

In dialectic logic there is no term which is so tortured with diverse meanings as *form*. Form fundamentally means space relations fixed by structure and externally exhibited as figure, but any body which has form must have all other of the properties, and so we use the term form with a figurate meaning to apply to any one of the properties of a body. This is good trope in poetry; it is good trope in literature; but it is fallacious in logical reasoning.

There are two elements of motion, the one absolute and the other relative. Speed is the absolute, path is the relative. Speed is the rate of motion; sometimes velocity is used as a synonym. Speed cannot be defined in terms of space and time, but speed

can be measured in terms of space and time. You cannot reduce speed to space and time, but you can measure speed in terms of space and time. Measurement is not reduction. Measurement is the expression of one thing in terms of another. We may use reduction by metonymy for measurement. We may reduce feet to miles or we may reduce cents to dollars; that is, we may express feet in terms of miles or we may express cents in terms of dollars. We can reduce one quantity to terms of another by standard tables or by actual measurement, but we cannot change one quantity into another. So we cannot change speed into space and time, though we can express the rate of speed in terms of space and time. There is no possibility of transmuting speed into space and time, one or both, though by a habit of expression we may speak of reducing speed to space and time. Yet every man must understand that he is using the term *reduce* only as a trope. How often I have listened to the statement that motion can be reduced to space and time—by motion the speaker meaning speed, and by reduction the speaker meaning the annihilation of motion.

When we use the term *form* or the term *reduce*, now in one sense and now in another, it confirms the belief in magic that one thing can be transmuted into another by occult causation. It makes the world a playhouse of legerdemain, and this is just the mental attitude necessary to conviction when metaphysical propositions are the subjects of discussion. By metaphysical propositions I mean those propositions by which the idealist attempts to prove that all the properties of bodies are fundamentally ideal, or when the materialists attempt to prove that all the properties of bodies are fundamentally dynamic.

I use metaphysic as the term to indicate that doctrine which affirms that one essential property can be derived from another, whether it be idealism or materialism; and I use the term to distinguish it from such doctrines as are taught by science.

That bodies and their properties can be produced by magic is

one of the oldest errors in human reasoning. This primeval error still remains as the essence of modern metaphysic in the doctrine that one essential property can be produced from another or be transmuted into another.

I have used the terms idealism and materialism because these are the terms by which these theories are usually known, but I think that the real nature of materialism would be better expressed by calling it dynamism, for that which I have called materialism is a theory that all the properties of bodies may ultimately be reduced to motion or force, and it would be peculiarly apt to call the doctrine dynamism.

There is a variety of this doctrine of dynamism which cognizes that there are other properties which cannot be reduced to force, such as mass or number, and extension or form, and time or cause, and yet it is believed that mind or consciousness can be reduced to force or motion. In this condition it becomes a dynamic theory of mind, but idealism derives all of the properties from consciousness or mind.

All human language is symbolic, for a word is the sign of a concept. The spoken word *horse* is the symbol of the concept of a horse. The written word *horse* is the symbol of the spoken word *horse*. The written word is therefore the symbol of a symbol. The written word and the spoken word are alike signs, and as linguistic phenomena they are signs of concepts; but the signs of the concepts are also signs or symbols of the objective reality which they signify. Being symbols of concepts they are also symbols of objective realities. There is a concept of a horse and there is also the horse itself. The horse is an objective reality, the concept is a subjective reality, and the same symbol stands for both. The word *dream* stands for an objective reality as an act of the dreamer; it also stands for a subjective reality when it stands for the act of the ego who is the dreamer. What is objective may also be subjective, for the object and subject may be the same person. Unless we understand this we cannot

understand psychology at all. It is fundamental to scientific psychology that the distinction between subject and object vanishes when the ego is the object, for the ego is also the subject. A word is a sign of a concept, or, as some grammarians tell us, it is the sign of an idea; but it is also the sign of the object. The history of spoken words seems to teach that the concept is rather held in view; the history of written words seems to teach that the objective reality is held in view; but in both cases the concept and object must be firmly grasped if we are to have a sound psychology. Thus the distinction between concept and object vanishes in symbolism, and the distinction between subject and object vanishes when the object is also the subject.

Idealism is a theory that there is no objective reality, or, to use the language of modern idealism, there is no trans-subjective reality. Symbols are signs of ideas, but not signs of objects. The objective world thus becomes the creation of thought. The apparent or phenomenal objective world is created magically by thought. There are no stars as objective realities; there are only stars by the magic of thought. Astronomy is not a science of orbs which depends upon the existence of objective realities; but it is a science of words which depends upon our concepts, and contributions to astronomy are only contributions to language and consist only in a better method of using symbols as words to describe our concepts. There are no atoms or molecules or substances as science teaches; but there are concepts of atoms, molecules, and substances, and all contributions to chemistry are but contributions to language by which symbols that do not represent reality, but only concepts, are made more useful as linguistic devices. There is no such a thing as motion; motion is but the product of thought. We think there is motion, but it has no objective reality, and contributions to dynamics are only contributions to language.

James Ward does not always assert these doctrines, but when he does not assert them he assumes them. When he antagonizes

materialism and substantiates his claim by quoting Boscovich and Huxley and other champions of materialism, he makes such assertions. He is right about the metaphysic of materialism, but he does not see that he overthrows metaphysical idealism by the same argument.

When the subject becomes the object, that is, when the thinker thinks about himself, the distinction between subject and object vanishes. The same principle holds true when we attempt to distinguish between mechanism and telism in the universe. Changes of dissolution are mechanical; changes of evolution are both mechanical and telic. There can be dissolution without telism, but there cannot be evolution without a mechanism which is telic. The watch in my pocket runs down by mechanism; it is wound up also by mechanism, but the winding of the watch involves telism. I cannot telically wind my watch; that is, I cannot wind it with my purpose unless at the same time I resort to the mechanism provided for winding the watch. All organic changes are controlled by purposes, but inorganic changes may occur without a purpose purely through the agency of mechanical laws. It is the error of materialism to suppose that all classes of changes are mechanical, that all telic changes can be resolved ultimately into mechanical changes, for in fact every telic change requires a mechanism, but the mechanism does not work without the purpose. The distinction between purpose and causation vanishes when purpose becomes a cause.

ABORIGINAL QUARRIES AND SHOPS AT MILL CREEK, ILLINOIS¹

By W. A. PHILLIPS

The quarries and shops about the village of Mill Creek, in southern Illinois, have been known for many years, but up to the present time have received only passing notice. The remains, however, indicate an important source of the large flaked implements of Mississippi valley, while the material quarried is one widely distributed in finished products. Identified with a region of unusual interest, the locality ranks with other centers of aboriginal flaking which have been recently studied.

Previous work relating to the subject is apparently covered in the following references. In Prof. Cyrus Thomas' description² of remains in Union and Alexander counties an account is given of the appearance of the main group of quarry pits west of the village and mention made of the prevalence of flaking refuse on many sites in the vicinity, notably on the Hale farm. In Professor Thomas' catalogue reference may also be found.³ Another description of the mounds, by Mr G. W. Morse, was published in volume III of the *American Antiquarian*.

In 1886 Mr Gerard Fowke visited the locality and inspected the quarries, and subsequently described many of the products of the shops. In his classification of the types of spades this author cites numerous examples from Union county and refers to series of unfinished forms obtained at Mill Creek.⁴ From Mr Fowke and

¹ Read before Section H, American Association for the Advancement of Science, Columbus meeting, August, 1899.

² *Report of Mound Explorations of the Bureau of Ethnology*; Twelfth Annual Report, pp. 148, 154.

³ *Catalogue of Prehistoric Works East of the Rocky Mountains*, p. 68.

⁴ *Stone Art*; Thirteenth Annual Report Bureau of Ethnology, pp. 79, 133-138; figs 59, 169, 170.

from residents of the village I have learned that observations were also made at this place by Col. P. W. Norris in 1884 and later by Messrs R. E. Earll and L. H. Thing.

A number of Mill Creek rejects collected some years ago by Mr R. L. Fahs and now in the museum of Northwestern University, led to the present study, which was begun in December, 1898, and continued in April, 1899, under the direction of the Field Columbian Museum. The writer is especially indebted to Dr G. A. Dorsey, curator of anthropology in the last named institution, for valuable suggestions and personal assistance in the exploration. As the work is not yet finished, only a preliminary report can be offered.

Material and Distribution.—I cannot perhaps do better than to point out in the beginning the distribution of products in this stone. In collections which represent the general area—south-western Illinois and eastern Missouri—several varieties of chert or flint reappear constantly as materials used for flaking, and of these certain distinguishing shades of color have thus far formed the basis of descriptions. They are spoken of as cream-white, whitish or light gray, yellow, brown and grayish-brown flint and chert, nodular bluish-gray hornstone, etc. The large forms classed as agricultural implements commonly occur in the darker varieties of rather coarse structure, although materials of finer grain corresponding to the lighter colors were shaped into smaller examples of the same class.

The chert obtained from the Mill Creek quarries was the least handsome of the flinty stones used for flaking. While generally of grayish-brown, an examination of the refuse heaps shows a number of colors. Sometimes the material is yellow or again brown, red-brown, mottled pink and gray, or gray, but all are of the same dirty or dusty cast. A banded arrangement of colors is also noticeable. In structure much of the material is coarse, fairly smooth on fracture, and with little or no luster. It is also soft in comparison with other flints and not remarkably brittle,

yet in one particular it surpassed all other stones and that was in its adaptability for flaking into broad, thin blades. More exact characters upon which to establish the identity of the chert derived from the Mill Creek diggings with that distributed over the region in finished tools will probably develop from microscopic sections now being prepared. Along both banks of the Mississippi to a point considerably north of St. Louis, and in the opposite direction through the southeastern counties of Missouri, blades of this stone are common. As the limestone formation in which the chert occurs is of great extent, other sources probably exist.

Locality.—The village of Mill Creek, Union county, is situated on the Mobile and Ohio railroad, half a mile north of the south line of the county. The stream of the same name which passes out of Union county at this point, becomes the dividing line between Alexander and Pulaski counties next adjoining. The locality, therefore, includes small portions of three counties. The surface is hilly and wooded. In the sketch map (figure 1) the sites of quarries and shops are indicated. The main group of pits is one mile west of the village on portions of Sec. 31, T. 13 S., R. 1 W., and Sec. 36, T. 13 S., R. 2 W. There is a smaller group two miles north of the village on Sec. 19, T. 13 S., R. 1 W., near the middle of the section. Shops are scattered about the hills both near to and at a distance from the quarries. The large shop site in Sec. 6, T. 14 S., R. 1 W. (Alexander county), offers the greatest visible accumulation of refuse. A railroad cut at Weaver hill, about three miles north of the village, and several mounds, are also shown on the map.

Geology.—Extensive phenomena of rock disintegration are met with in this part of the state which lies south of the glacial boundary, and it is with one of these that we have to deal in examining the source of the chert. The railroad cut at Weaver hill furnishes an excellent view of the chert-bearing formation, and a study of the soil and rock exposed at this point was of

great service in trenching the quarries. The section is through clay overlying the limestone. In the sides of the cut and in the embankment beyond the hill, nodular masses of chert are scattered in great numbers. Details and measurements taken at the

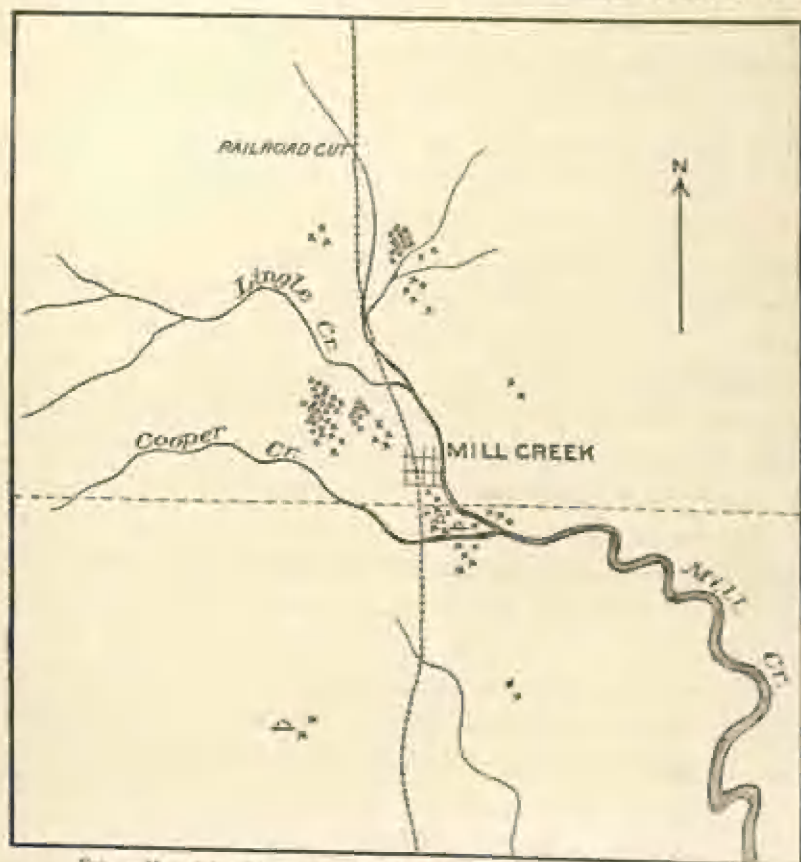


FIG. 1.—Map of the vicinity of Mill Creek, showing location of quarries and shops.

middle of the cut were as follows: Fifteen feet of reddish clay constitute the upper stratum, which is free from gravel and other stones with the rare exception of a pebble here and there near the bottom of the layer. A broken pavement-like layer of cherty rock, eight inches thick, lies next below, but is poorly defined. Twelve feet of clay of a deeper red, mixed with coarse sand and many free nodules of chert, complete the section down

to the limestone. There is no arrangement of the nodules as they lie in the clay. The limestone may be seen to a depth of nine feet and presents an uneven surface. Cavernous hollows and furrows six to eight feet deep, and of irregular width, separated by rounded and often fantastic prominences of rock, characterize the exposure throughout its length, a distance of several hundred yards. The original condition and manner of occurrence of the chert are at once apparent. Thin horizontal rows of concretions, often regularly spaced and mainly of one size in a given layer, stand out of the softer rock in a conspicuous manner. Many empty socket-like cavities show where nodules have dropped from their places, while loose nodules may be rattled about in other cavities which have not dissolved to such an extent as to free the stone. A much greater thickness of limestone than the twelve feet now represented in mixed clay, sand, and chert next above must have existed to supply the number of concretions that are found free.

The conditions here presented probably do not occur within the glacial boundary, except in the driftless area, which Mr Leverett informs me offers similar phenomena in northern Illinois.

There are few nodules to be seen on the surface or in natural exposures in the surrounding country, still they were observed in stream beds at two points on branches of Mill creek south of Weaver hill, and a large block of limestone with a row of protruding nodules occurs several miles west of the village on a branch of Lingle creek. A knowledge of the underlying stratum containing free chert concretions, might formerly have been gained from such occurrences.

Characters of the Chert Nodules.—Externally the nodules are all of a rusty brown color, rough and harsh and slightly encrusted. In shape they are usually thin and flat with curved outlines and rounded edges, but as with many other nodular formations the shapes and sizes are exceedingly varied. The cross-section is

generally in the form of an elongated ellipse (figure 2, *b*), which greatly facilitated the flaking of large products. Some masses are like flagstones, occasionally two feet long and half as wide, and



FIG. 2.—Outline of large chert nodule and characteristic cross-section. (One-sixth natural size.)

vary from two to five inches in thickness. Small nodules are like flat-pebbles and cobblestones. Several smaller masses are often united by arms or extensions, with openings between, while the shapes of familiar objects, the heads of animals, etc., are imitated.

The Quarry Sites.—The main site of ancient quarrying is reached by a path along the top of the hill which rises directly west of Mill Creek station. The distance is little less than a mile to the first of the pits, a group covering four or five acres, while across a narrow valley and on the next hill to the west, the pits cover an area of ten or twelve acres. The land is wooded, but many of the larger trees have been felled and a considerable growth of small trees

and bushes obstructs a general view. Bowl-shaped depressions, twelve to forty feet in diameter, are closely crowded together over the top and down both sides of the hill. Few exceed four feet in depth, but accumulations of leaves hide the surface. While the exploration was in progress, a fire which burned over the area of the smaller group did much to reveal surface appearances. Although scattered refuse is fairly abundant, it is in great measure imbedded in the soil. Along the west slope, at the head of a steep side-valley in the hill, the pits are elongated into indistinct trenches.

In regard to the number of pits on this hill, a definite result was never obtained in spite of many attempts to count them during the early part of the investigation, but it is safe to say that there are several hundred. Any count, however, would be inexact if surface indications only are considered, as facts learned from the excavation will show.

The pits located on Sec. 19, north of the village, occupy a low hill in the corner of a field which has long been cultivated, and in extent cover about three acres. This is probably the place to which reference is made by Professor Thomas¹ as difficult to plow on account of stone refuse. A section of the hill seems formerly to have been exposed by the stream which flowed through an old lagoon on the southeast, and in disclosing the presence of the nodules may have led to the ancient quarrying. The remains of about forty pits were counted, although cultivation has nearly



FIG. 3.—Diagram of trench in western wall of quarry site. A, B, C, average depressions in the surface of quarry site; a, b, c, dump piles; d, undisturbed red clay; e, former surface; f, mold; g, h, i, ancient pits filled by natural agencies; j, position of a pit filled at the time of active quarrying; k, l, m, quarry mounds. Length of section, 40 feet; greatest depth, 24 feet. The angular outline represents the floor of the trench seen in profile.

leveled the surface. Near the fences just above the stream bank the pits are well defined.

Excavation on the Main Quarry Site.—A trench shown in figure 3 was dug along the top of the hill near the northern end of the large group of pits. Two well-marked depressions (A and B in the diagram), were selected for the purpose, one nineteen feet, the other thirty-two feet in diameter, separated by a bank about

¹ *Mound Explorations*, op. cit., p. 155.

three feet high (*b*). Digging was begun on each side of the bank, and the undisturbed clay and former surface of the hill determined at that point. Above the old soil the pile consisted of a mixture of broken nodules, coarse sand and clay, and occasional flakes and rejects.

Extending the section across both depressions, a deposit of black forest mold was first encountered, covering the surface of each pit to a depth of eight or ten inches at the thickest portion. Below the black mold, material like that found in the bank but showing partial sorting and arrangement in bowl-shape layers, was followed to a considerable depth. The old pit (marked 1) was traced to a depth of over ten feet, with a width of ten feet at the mouth between undisturbed soil. Pit 2 was followed to a depth of eighteen and one-half feet, with a width at the top of thirteen feet. As the work progressed it became evident that two old pits occupied the space of the single large depression (*B*). The second of these (3) was not traced below seven feet; its width at the mouth was approximately twelve feet. The mixed material which filled the openings was of yellowish color, and soft and wet in comparison with the stratum of firm red clay which surrounded it; there was therefore very little difficulty in tracing the outlines in the wall of the excavation. The openings were funnel shaped, and judging from the partial arrangement of the filling, had acquired their form from natural causes — the gradual washing in of the surrounding dump-piles and the caving of the edges.

In tracing the old pits, the dump-piles, *a* and *c*, seen at the right and left in the figure, were intersected by the trench. These piles differed from the one first excavated, in that *a* was wholly clay, and *c* clay topped with a layer of broken nodules. Save for the dump-piles and mixed contents of the pits, the section was altogether in the overlying red clay represented at the railroad cut by a thickness of fifteen feet and here by several additional feet. Stone had not been encountered at any point in undisturbed relations. An attempt was then made to reach the

nodule-bearing stratum, and the depth at the lowest level in the trench, under pit 2, was increased to twenty-four feet, when stone was encountered. The wet contents of the old pit, however, made further work dangerous, and a cave-in followed soon after the bottom was abandoned.

Trenching was then continued through the next depression (C), shown at the right, when the outlines of two more openings appeared, one in either wall of the trench. Pit 4 presented the characters of the three already described; pit 5 was quite different. While the mouths of the pits previously examined had evidently been left open when deserted by the quarrymen, the last pit exposed had been filled when still fresh with material brought from the bottom of some neighboring pit, and had therefore been preserved in its original shape. This pit was traced to a depth of ten and one-half feet and was found to slant into the trench in a manner favorable for excavating. Its contents were like the material found in bank *b*,—mainly broken nodules without arrangement or sorting. Operations were here brought to an end, but measures were taken to protect the work done on this portion of the trench that it might be resumed at the stage in which it was left. The trench reached a length of sixty-two feet.

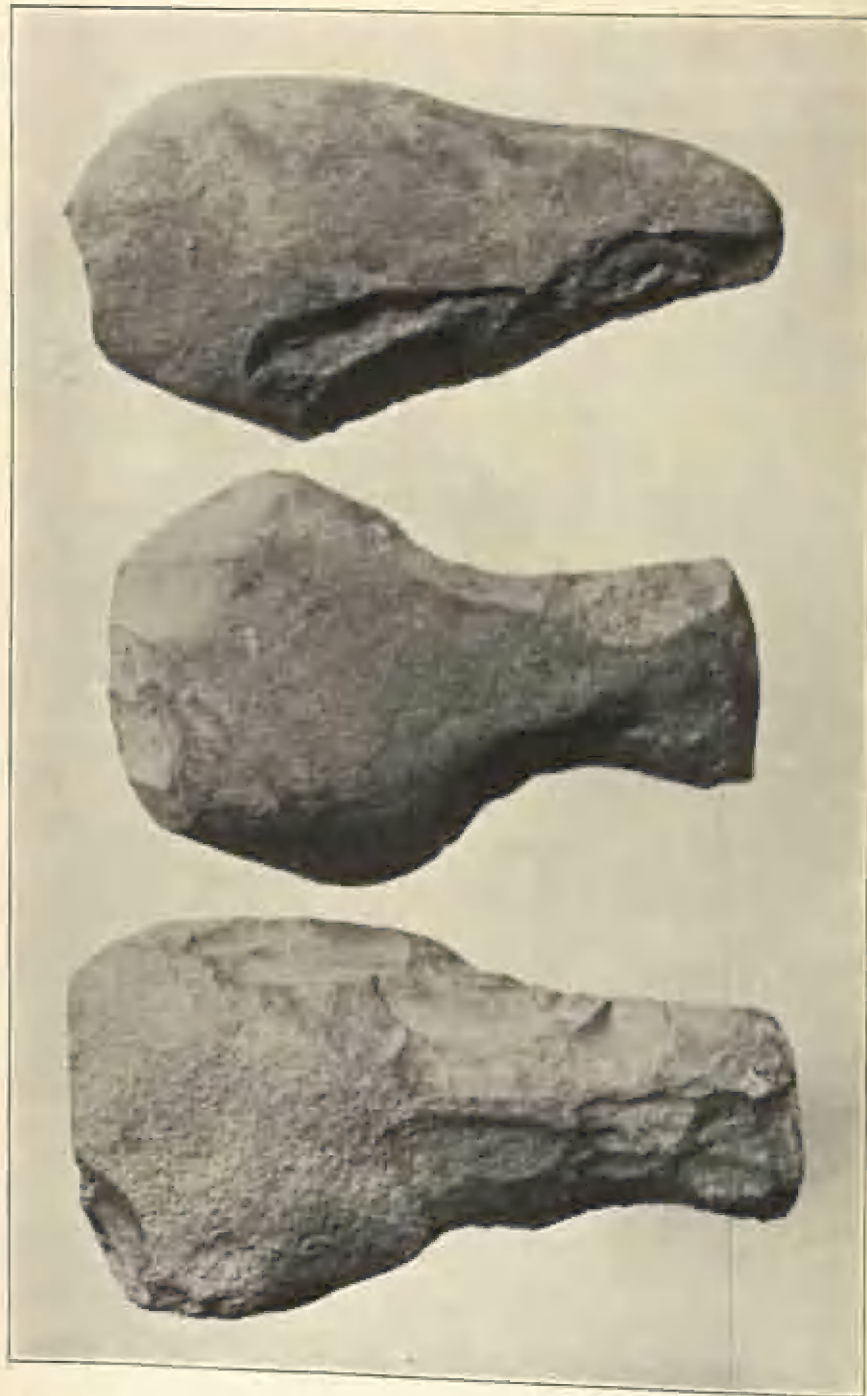
The distribution of art remains need only be pointed out in this connection. Hammers of peculiar type were found in pits 2 and 3 at the places indicated by *h, h*. Flakes were fairly well represented in some layers of the filling, and were encountered as far as the pits were traced. Few rejects of stages of working above that of testing were found in the excavation. A broken flaked stone, classed as a reject at the time of finding, has since with washing proved to be a used implement—a digging tool in all probability. Nodules bearing the marks of a few blows, as evidenced by the loss of a single flake or the presence of a fracture, constituted the main proof everywhere of previous handling and testing of the stone.

The character of the section shows that no change is now

going on, and present conditions have probably existed during the whole period of growth of the trees standing on the site. Few trees grow in the depressions; the largest oaks, some of a diameter of two feet, are rooted in the old dump-piles above the former surface.

The Quarry Refuse.—In digging through the clay, the ancient quarrymen brought to the surface so much of that material that its mixture with the stone refuse was constantly resulting, and this fact in some measure accounts for the scarcity of visible quarry-shop litter; still, in some spots, especially on the western slope of the hill, low piles were observed which were examined for the purpose of determining the character of the work done after the nodules were brought to the surface. Over circular spaces averaging fifteen feet across, broken nodules were scattered as if a selection of desirable stone had been made. The work was confined mainly to trimming off bunches and irregular ends and testing the quality of the stone by such fractures and occasional flaking. Some rejects occur of stages of working far advanced toward finished forms, but they are relatively few. Shaping seems commonly to have been carried on farther from the site of quarrying. Small shops occur on the cleared land at the southern end of the hill, and others near by may be obscured by the forest.

Quarry Tools.—The tools recovered from the trench were probably all used in the quarry work proper. The used and broken blade shown in figure 4, *a*, was a thick, roughly shaped implement of a type similar to the agricultural tools of the region. While not complete, its shape is readily supplied from other examples obtained from the lodge sites. Its original length may be considered to have been equal to specimen *b* of the same figure, or about thirteen inches. The wear at the broad end of the blade consists of a rounding off of the edge, but without the degree of polishing which is generally so marked in the used spades and hoes. It was doubtless hafted and used in digging.



QUARRY TOOLS FOUND IN THE TRENCH (ONE-HALF NATURAL SIZE)

The hammers (plate 1) were provided with short handles, shaped out of the stone, and in every instance presented a pol-

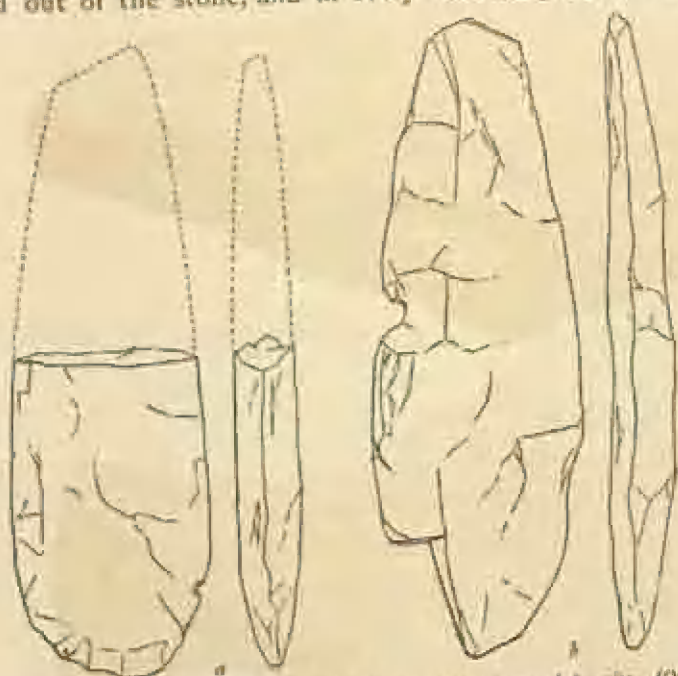


FIG. 4.—Quarry tools. *a*, used half-blade found in the trench; *A*, from a lodge site. (One-fourth natural size.)

ished area on the flat side of the hammerhead (figure 5), presumably from friction and contact with the thumb while in use. It seems likely that this tool was used in a flatwise position in the hand (figure 6), and with an upward stroke, judging from the flaking at the heavy end, and that its function was to loosen the nodules from the clay. If this interpretation is correct, the specimens are in the main right-handed examples. The average length of this tool is eight inches.



FIG. 5.—The use-marks on the quarry hammer.

Accumulations of Shop Refuse.—Shop refuse is abundant on the Hale farm,

at the county line, between the railroad and the creek. A group of mounds on this farm has been described as situated "in the midst of or rather on an immense refuse heap; in fact the whole top of this ridge appears to be covered to a depth of from three to six feet with an accumulation of flint chips, broken pottery, mussel shells, etc. Charcoal, burned limestone, and other evi-

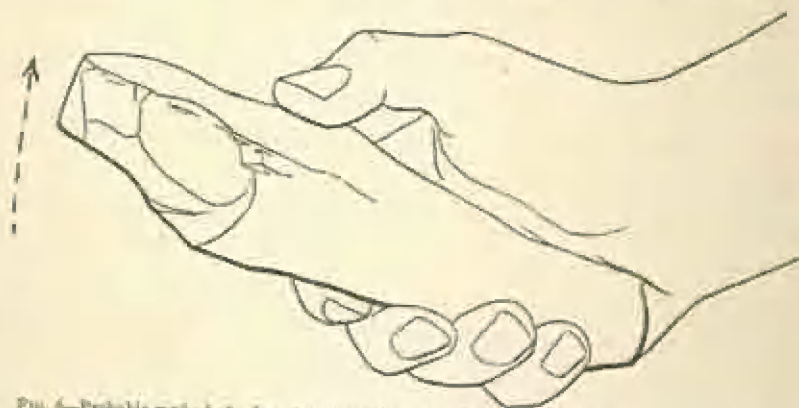


FIG. 4.—Probable method of using the quarry hammer. In the position indicated an upward blow would cause the flaking of the heavy sand as well as friction under the thumb.

dences of fire are plentifully scattered throughout the mass. The locality would probably be better described as a kitchen heap averaging four to five feet in depth and covering several acres."¹

An area of three acres about the Hale house is thickly covered with refuse, while this tract might be increased to six or eight acres to include scattered patches. The farmhouse stands on the larger mound, while an orchard, barnyard, and garden occupy at least half of the ridge where the remains are most abundant. The depth of the deposit has been overestimated.

On the hill across the valley at the south, an area of two or three acres offers similar litter, likewise the extension of Pulaski county directly east on the opposite side of the creek.

On the Heilig, Goodman, and Fink farms, southeast of the smaller group of quarries, there are many accumulations of refuse, and here the manner of occurrence is better shown than in the

¹ Thomas, *Mound Explorations*, op. cit., p. 148, map.

confused deposits on the Hale place. Flaking refuse generally, in this vicinity occurs in well-defined circular spaces about thirty feet in diameter and from several inches to a foot in thickness at the center. Unfinished, broken, and rejected work, with quantities of flakes, covers the ground with little mixture of soil save at the edges where the material is distributed more sparingly. Such deposits are seen everywhere in the fields, and in spite of repeated plowing are still distinctly outlined. Near the southwest corner of the Fink farm one of these accumulations was trenched. The excavation revealed little concerning the flaking refuse, which could not be made out from inspection of the surface, but besides the chert there was found to be a collection of charcoal at the middle of the space, and fragments of pottery, several broken and used hoes, hammerstones, a limestone tool, and grinding-stones completed the list of mixed objects. In view of this result all similar deposits were interpreted as lodge sites, and on the Hale farm the area so thickly covered with the same mixture of remains must have been repeatedly dwelt upon and used as a site of working until the various deposits joined and possibly lay one above another.

Rejectage, Flakes, and Products.—The main features of rejectage are here essentially the same as in all leaf-blade working, and the principles established by Professor Holmes need only be applied to the special case in hand.

The nodules were eminently suited for flaking, and natural shapes supplied width and relative thinness when required. Remarkable results seem chiefly to be due to a regard for the common cross-section shown in figure 2. A preliminary thick stage was therefore eliminated in a measure from a large portion of the work done, and massive forms do not appear as often as in the rejectage of quarry-shops generally. Thin rejects, on the other hand, are numerous and in any other known group of shops might pass for very successful shaping in the various stages represented.

Again, certain forms intended to be strong and thick have been shaped from thick nodules or in a manner designed to preserve relative thickness. This class of rejectage is very similar to the average forms of waste blades found in the Peoria quarry-shop in Indian Territory and described by Professor Holmes.¹

The shape of the nodule often supplied a desirable curve on-the-flat which has been commented on in descriptions of the finished products. The rejectage also contains many specimens illustrating the shaping of forms which are prominently convex on one side and flat on the other.

In size and shape rejected blades are exceedingly variable and a wide range of products is easily traced. The forms which pass into broad thin blades (plate II) vary from eight to seventeen inches in length, four to nine inches in width, and one-half to three inches in thickness. Half-blades are common. Long and relatively narrow forms pass into thin knife-like blades on the one hand and into thick celt-like forms on the other. Circular forms are not so frequent. Some highly developed products were finished by grinding on-the-flat, while an edgewise grinding is characteristic of all rejects which have arrived approximately near completion. As a rule the latter operation affected only that part of the implement which was designed to enter into the hafting.

A more striking example of flakage probably does not exist in any similar line of refuse. The flakes are uniformly large, thin, and wide, and commonly are four inches in length where products like the spades have been shaped. Exceptional flakes are of much greater length. Favorable natural shapes with the superior flaking quality of the material were evidently the circumstances which made the spades and hoes possible, whatever may

¹ Bureau of Ethnology, Bulletin 7 = 21. A visit was made to Peoria for the purpose of comparing the refuse found there with that observed at Mill Creek. Both places have yielded products of large size, and while there are many points of difference and the finished forms of the Peoria material are not yet perfectly known, the two localities doubtless have supplied very similar implements.



AVERAGE REJECT OF SPALL FLAKING FROM THE HALE SHOP SITE (ONE-HALF NATURAL SIZE)



have been the special skill of the worker or his method of operating.

Mill Creek products are among the most noteworthy of the great family of leaf-blades, and deserve a detailed account which is quite beyond the scope of the present paper. They are well represented in museums and are familiar to archeologists. Fifteen or twenty specializations were observed in collections in the vicinity. Implements made here were used in a different class of pursuits from those flaked at Piney branch and Flint ridge. The rejectage which would occur in shaping smaller forms, as projectile heads, is altogether absent.

Tools of the Flaking Shops.—Tools recovered from the shop sites include numbers of flaking hammers of the ordinary type found throughout the country. They are principally of the same material as the stone worked. A few hammers with handles like those found in the trench also occur, but the heavy end is battered about the edge as in the case of the flaking hammer. Stones used for grinding are particularly abundant. Some specimens are of large size and are marked with deep grooves from the edgewise grinding of implements, while others are without grooves and were used for grinding on the flat. Many rejects served as grinding tools (figure 7), the sharp incrustation of the nodules being particularly effective in abrading. Blocks of sandstone were also used.



FIG. 7.—Reject used as a grinding-stone. Appearance of the common form with marks from edgewise grinding. (One-fourth natural size.)

Associated Remains.—Important remains are associated with the industry which has been described. The stone grave mound

on the Hale farm and the large mound on which the house stands were built at the time of active quarrying and flaking. Refuse is distributed among the cists and mixed with the earth of which the mounds are made; refuse has also accumulated on lodge sites located over the excavation where material for the mounds was dug. Much other evidence is of a character to connect the industry with the ancient race whose works extend through the middle Mississippi valley.

MAYAN TIME SYSTEMS AND TIME SYMBOLS

By CYRUS THOMAS

That the discovery by Mr J. T. Goodman¹ of the signification of certain time and numeral symbols in the Mayan inscriptions, coupled with the discoveries by Dr Förstemann in reference to time counting and also time symbols, must point out and open new channels in the investigation of Mayan hieroglyphics, is evident. The determination of characters which had previously received widely different interpretations must cancel a number of previous speculations, and the discoveries must largely influence future attempts toward interpretation of the inscriptions and codices. While Mr Goodman's ungenerous treatment of co-workers in the same field—ignoring entirely the work they had done, though often appropriating it and building thereon—is calculated to give his monograph an unfavorable reception: and although some of his assumed discoveries must be rejected as lacking proof and his leading theory discarded as untenable, the new light he has thrown on the subject by his real discoveries, when added to that from Dr Förstemann's investigations, will penetrate the mysteries of the inscriptions and possibly also of the codices. The writer may be permitted to say that he makes this assertion after careful investigation, during which he has tested, one by one, Goodman's renderings by reference to the originals as given in Maudslay's excellent photographic reproductions and drawings, accepting only those sustained by absolute demonstration.

The discoveries mentioned consist chiefly in ascertaining the fact that the time periods or orders of units, which are indicated in

¹ *Archaic Maya Inscriptions*; Maudslay's *Biologia Centrali-Americana*, pt. VIII.

the Dresden codex by the relative positions of the numerals, or counters, are indicated in the inscriptions by special symbols. It is well known that among the Mayan tribes the vigesimal system was in vogue, and that to express numbers up to 19 (that is, units of the first or lowest order), they used dots and short lines; but to express units of the higher orders the authors of the codices (at least of the Dresden codex) had recourse to relative position. For example, to indicate 5 units of the first order, 4 of the second, 11 of the third, and 6 of the fourth, they placed them one above another, thus:

Fourth order	6 =	28,800
Third order	11 =	3,960
Second order	4 =	80
First order	5 =	5
		<hr/>
		32,845

— twenty of the first order making one of the second, 18 of the second one of the third, 20 of the third one of the fourth, and so on; the number of the second order to make one of the third having been changed in time counting from the regular vigesimal order to 18, apparently to conform to the number of months in a year and thus to facilitate counting. It is apparent, therefore, that the value of one unit of each of the different orders in time counts was as follows, the day being the primary unit:

First order	1 day
Second order	20 days
Third order	360 days
Fourth order	7,200 days
Fifth order	144,000 days

Now, Mr Goodman has discovered that in the inscriptions the orders of units (or real time periods as he believes them to be) were indicated not by relative position, but by specific characters. To these orders of units (or time periods, as he terms them) he

has applied (except the first) arbitrary names, as follows: To the first or lowest, day or *kin*; to the second, *chuen*; to the third, *ahan*; to the fourth, *katun*; to the fifth, *cycle*; and to the sixth, *great cycle*; each having its symbol.³

Mr Goodman has further discovered that in the inscriptions a date is frequently followed by a number series and this by another date, and that, as in the codices, this intervening number indicates exactly the lapse of time from one of the given dates to the other. As this, when several times repeated with different dates and different numbers, amounts to actual demonstration, we are compelled to accept his claimed discoveries as real, so far as thus proven. As I have presented in detail, in a paper now in course of preparation, the data verifying these discoveries so far as the data afford demonstration, a simple statement of the fact must suffice here.

Although credit is due chiefly to Dr Förstemann for demonstrating the method of expressing high numbers in the Dresden codex, which has been followed with further evidence by the writer, I may note in passing that we seem to have overlooked the fact of the near approach of this method to that of the

³ Although we speak of this discovery as Mr Goodman's, yet we would do Dr Förstemann injustice if we should overlook the fact that part of the credit is due to him. Not only had he discovered and applied to the time series in the Dresden codex the orders of units accepted and used by Mr Goodman, but in fact had determined as early as 1891 the value of the symbols designated *ahan* and *katun* by Mr Goodman, as appears from his article "*Zur Maya-Chronologie*" in the *Zeitschrift für Ethnologie* for that year. Mr Goodman's paper was not published until 1897, although it appears from his preface that it was completed in 1895. If Dr Förstemann had not seen Mr Goodman's paper when his article titled "*Die Keilmischrist von Palenque*," was published in *Globe* in 1897, and it makes no reference to the former, it is evident that he had discovered independently the value of the symbols which Mr Goodman designates *chuen* and *cycle*. It is evident also from the figures (numbers) he gives in his "*Zur Entzifferung der Mayahandschriften*," IV, (1894), that Dr Förstemann had discovered as early as June, 1894, the value of most if not all the five time-period symbols, as these figures are based on the series found on the stone and altars at Copan, as given by Maudslay. To the 360-day period Förstemann applied the name "old year," and to the 7200-day period the name "old *ahan*"; but he failed to discover their use. The chief credit therefore for this important discovery should be given to Mr Goodman.

ordinary decimal system of the present day, which has been suggested—though not expressly dwelt on therein—by reading Professor McGee's able paper on *The Beginning of Mathematics*¹; in the one, as in the old Babylonian notation, it is by steps upward, in the other by steps to the left.

One important result of Mr Goodman's discovery is the evidence it furnishes of the strong similarity, if not absolute identity, of the time systems or calendars of the different Mayan tribes. To call attention to this point is the chief object of this paper. By means of his discovery we are enabled to determine positively the dates where the symbol is obscure or doubtful, and the numeral or time-period symbols where they vary from the typical forms. It was in this way that the advance in the interpretation of the time and numeral symbols of the Dresden codex was made and the explanation of their use and office was given.

The names and order of the days of the month given for the Maya (i. e., the Maya proper, or Yucatecs) and the Tzental and Quiche-Cakchiquel tribes, as based on historical evidence, are as follows:

MAYA	TZENTAL	QUICHE- CAKCHIQUEL	MAYA	TZENTAL	QUICHE- CAKCHIQUEL
1. Imix	Imox	Imox	11. Chuen	Batz	Batz
2. Ik	Igh	<i>Ik</i>	12. Eb	Euob	<i>Et</i>
3. Akbal	<i>Volan</i>	Akbal	13. Ben	<i>Ben</i>	Ah
4. <i>Kau</i>	Ghanan	Kat	14. <i>Ix</i>	Hix	Balam
5. Chicchan	Abagh	Can	15. Men	Tziquin	Tziquin
6. Cimi	Tox	Camey	16. Cib	Chabin	Ahmak
7. Manik	Moxic	<i>Quch</i>	17. Caban	Chic	<i>Noh</i>
8. Lamat	<i>Lambat</i>	Canel	18. Ezanab	<i>Chinax</i>	Tihax
9. <i>Muluc</i>	Molo	Toh	19. <i>Cauac</i>	Cahogh	Cooc
10. Oc	Elab	Tzi	20. Ahau	Aghaua	Hunahpu

The names in italics are the supposed dominical days in the calendars of the different tribes. That the dominical days of the Troano codex, which is generally attributed to the Maya of

¹ *American Anthropologist* (N. S.), vol. 1, October, 1899.

Yucatan, were *Kan*, *Muluc*, *Ix*, and *Cauac*, is conceded; and that those of the Dresden codex, which are known to correspond with those of the inscriptions at Palenque, were *Akbal*, *Lamat*, *Ben*, and *Ezauab*, is also admitted. Goodman, it is true, shifts the initial day, but his method of counting gives the same result. It is seen, however, by reference to the list, that the three calendars, according to the historical evidence, begin the years with different days, it being assumed that the names opposite one another in the lists are equivalents so far as relative position in the series is concerned. Although the parallel names (names occupying the same relative position) differ considerably from the standpoint of morphology, some are but equivalents (as to signification) in the different tribal dialects; but this does not apply to all, as is evident from the efforts of Drs Brinton and Selser to bring them into harmony.¹ *Imix* and *Imox*, *Ik* and *Igh*, *Kan* and *Ghanan*, *Gimi* and *Camey*, *Lamat* and *Lambat*, *Muluc* and *Molo*, *Ix* and *Hix*; *Eb*, *Euob*, and *Ee*; *Cauac*, *Cahogh*, and *Cooé*; and *Ahan* and *Aghanal*, are merely different forms of the same names. But this cannot be said of *Volan* and *Akbal*, *Kan* and *Kat*, nor of most of the other corresponding names.

Turning now to the codices and inscriptions, let us compare the days as represented symbolically in the different sections where found. Of course we cannot say positively to what tribes or to the ancestors of what tribes the inscriptions in the ruins of the different sections are respectively to be attributed. All we can assert positively is that they are Mayan; that those of Palenque are in what is or was the country of the Tzental and Zotzil; those at Menche (or Lorillard city) in the country of the Lacandon; those at Copan and Quirigua in the country of the Quiche and Cakchiquel; and those at Tikal in the country formerly occupied by the Itzac. Nor can we say that uniformity in the form of the day symbols proves positive identity in the names, allowing

¹ See also the writer's paper *Day Symbols of the Maya Year* in the Sixteenth Ann. Rep. Bur. Am. Ethnology (1897).

for the variation necessary to express the same idea in the different tribal dialects; nevertheless it tends in this direction, and undoubtedly indicates unity of origin.

That there are in the inscriptions forms of some of the day and month symbols and peculiarities in other characters not observed in the codices is true. But considering what has been stated by early writers as to the names and order of the days and months among the different tribes, the agreement in the forms of the symbols and in the order of the days and months in the inscriptions is remarkable. Take, for example, the day *Ahan*; although we meet here and there with a face form, the usual symbol at Palenque, Tikal, Menche, and Copan is the same as that found in all the codices. The same is true of the symbols for the days *Ik*, *Akbal*, *Kan*, *Ben*, *Esanab*, *Lamat*, *Chuen*, and one or two others. *Cimi* and *Caban* vary slightly from the typical form; *Muluc*, *Eh*, *Men*, and *Ix* are of rare occurrence in the inscriptions. Another fact which has an important bearing in the comparison of systems is that each holds its relative position throughout the series in precisely the same order as in the Dresden codex. There is no known variation from this rule. Not only so, but the proof is clear that the years are counted from the same dominical days. For example, we find *Ahan* occurring on the 3d, 8th, 13th, and 18th of the month; *Akbal* on the 1st, 6th, 11th, and 16th, which can be true only when *Akbal*, *Lamat*, *Ben*, and *Esanab* are the dominical days or year-bearers.

Concerning the question as to how far the similarity in the form of the day symbols can be taken as an indication of a similarity in the names, the following facts are noted: The day *Votan* in the Tzental calendar stands in the place of *Akbal* in the other calendars. Now, *akbal*, in both Maya and Cakchiquel, signifies "darkness," "night," and "to grow dark," or "become night"; while *Votan* is the name of a hero-god formerly much venerated by the Tzentals. *Votan* or *uotan* is supposed to signify "heart" in the Tzental dialect, and according to Nuffez de la

Vega he was called "The Heart of the Nation." Yet the symbol of this day is remarkably uniform in the Dresden codex and in all the inscriptions where it appears. The same is true of *Kan*, *Lamat*, and *Ezanab*, which never appear as face characters. As it is admitted that *Votan* is not equivalent to *Akbal*, its corresponding name, *Kat* to *Kan*, nor *Canel* to *Lamat*, how are we to account for the uniformity in the symbols of these days in the several regions which the tribes mentioned are known to have inhabited?

However, the widest variation between the historical evidence and that of the inscriptions is in reference to the names of the months. In regard to these, as given historically, it may be stated that those of the Maya (proper) and the Tzental-Zotzil and Quiche-Cakchiquel groups differed throughout morphologically and in signification, so far as the latter has been determined, no name in one, with a single exception, being the same as that in another. As compared with those in the Maya calendar, which are —

1. Pop	7. Yaxkin	13. Mac
2. Uo	8. Mol	14. Kankin
3. Zip	9. Chen	15. Moan
4. Zotz	10. Yax	16. Pax
5. Tzec	11. Zac	17. Kayab
6. Xul	12. Ceh	18. Cumhu

those of the Tzental were 1 *Tzum*, 2 *Batzal*, 3 *Si sac*, etc.; those of the Quiche, 1 *Tequexepual*, 2 *Tziba pop*, 3 *Zac*, 4 *Ch'ab*, etc., differing in like manner throughout. So widely different, in fact, are they, that Drs Brinton and Seler made no attempt to bring them into harmony. In fact Dr Brinton says: "While the names of the twenty days of each month are practically identical in all the five languages [including Zapotec and Nahuatl] under consideration, the reverse is the case in the names of the eighteen months which made up the vague solar year. These differ widely

in tribes very closely related, as the Quiches and Cakchiquels; and even in the same dialectic area, as among the Nahuas."

Now, in contrast with this the symbols are not only comparatively uniform in the inscriptions, as shown by the figures given in Mr Goodman's work and in Maudslay's photographs, but with very few exceptions they correspond with those in the Dresden codex. There are also indications that the names were the same as found in the Maya calendar. For example, the symbol of the month *Pop* is characterized by an interlacing figure apparently intended to denote matting; in Maya *pop* signifies "mat." The name of the 4th month, *Zotz*, signifies "a bat," and the symbol, which is always a face form, has an extension upward from the tip of the nose presumably to indicate the leaf-nose bat. But as conclusive evidence on this point, if Mr Goodman is correct in his interpretation, the month is designated on one of the stelæ at Copan by the full form of a leaf-nose bat. So general is the uniformity of the month glyphs, in both the Dresden codex and the inscriptions, that Mr Goodman has not hesitated to apply the names as given in the Maya calendar, and to place side by side those of the inscriptions with those of the codex. "There is not," he says, "an instance of diversity in all their calendars; their dates are all correlative, and in most of the records parallel each other." Of course there are sporadic variations and imperfect glyphs which often render determination by simple inspection uncertain, but this is generally aided by the connecting numeral series.

The change of day symbols from the typical form to face characters is found in the codices as well as in the inscriptions, as is shown by an examination of the Troano codex, where this is of frequent occurrence. The occasional variations of the symbols for the days *Chicchan*, *Cimi*, and *Ix*, in the latter codex, are so radical that identity is ascertained only by means of the positions they occupy in series. It is chiefly on this uniformity that Mr Goodman bases his theory of an archaic calendar.

Another item in the evidence is found in the identity in form

of the time-period symbols or symbols denoting the orders of units. Though face forms are frequently introduced, the typical forms are the same in the inscriptions of each section, and the face characters are used in each. In addition to the localities mentioned, one or two of the former are found in the inscription on a tablet from Tonina, Chiapas; on an amulet from Ococingo, Chiapas; and on a vase from a Quiche tomb, Guatemala; and at least three of the typical forms are found in the Dresden codex.

We therefore have as evidence on this point the similarity in form of the day, month, and numeral symbols; the uniformity in the order in which the days and months follow one another; the use throughout (except by the Maya of Yucatan) of the same days as dominicals or year-bearers; and in fact, throughout, precisely the same time system and the same method of representing graphically its several features. In addition we find represented in the inscriptions of each locality what Maudslay has appropriately termed "initial series," beginning with a large or quadruple glyph, as that with which the inscription on the Tablet of the Cross at Palenque begins (in the upper left-hand corner of the left slab), and also the same order in placing the glyphs with reference one to another; that is, all are to be read in the same direction. These facts, therefore, indicate much closer uniformity in the time systems of the different sections than that inferred from the historical evidence.

What is the deduction to be drawn from the above-mentioned facts? Is Goodman right when he says: "From this is deducible the important fact that — whether a single empire, a federation, or separate nations — they were a homogeneous people, constituting the grandest native civilization in the Western Hemisphere of which there is any record"? In other words, do they not show that when the inscriptions were chiseled the Mayan group was much more homogeneous and the tribal distinctions far less marked than when the Spaniards arrived on the scene? Dr

Brinton¹ says that "in all the Mayan dialects the names [of the days] belonged already at the time of the Conquest to an archaic form of speech, indicating that they were derived from some common ancient stock, not one from the other, and that, with one or two possible exceptions, they belong to the stock and are not borrowed words." The inscriptions seem to go far toward confirming this view, which was based wholly on linguistic evidence, although the opinion would imply either that the Maya of Yucatan are to be regarded as the older division of the Mayan group (excepting the Huasteca), or that they had retained, with less change than other tribes, the original names of the days and months.

If the view herein reached be accepted as well founded, the inscriptions and codices will form in this respect a fixed basis for further research into the history of the Mayan tribes. The next step will be to determine from these records, if possible, the probable age of the inscriptions, for, as appears from what has been shown, the history as derived from the early Spanish writers cannot be fully relied on: and the traditions can only be trusted so far as they agree with the monuments and the linguistic evidence. That Mr Goodman's conclusion in this respect cannot be accepted is evident from the quotation given in a previous communication to this journal.²

As will be seen, I have limited this paper to a very brief summary of what may be called one branch of the mathematical evidence. To exhaust it would require a comparison of the number and calendar systems of the Mexican codices. Nor have I broached the mystical use of time periods and numerals by the Maya and Nahua, both of which must have an important bearing on the subject treated.

¹ *Native Calendar*, p. 21.

² *American Anthropologist*, N. S., vol. 1, p. 559.

LINGUISTIC FAMILIES OF MEXICO

BY OTIS T. MASON

In 1895 Alfonso L. Herrera and Ricardo E. Cicero published in the City of Mexico a *Catálogo de la Colección de Antropología del Museo Nacional*, in which will be found Pimentel's linguistic families and Orozco y Berra's list of tribes, more than seven hundred in all. In 1891 appeared Dr Brinton's *American Race*, in which, for the first time, he brought all the tribes of North America and South America into a system. The Bureau of American Ethnology in the same year issued Major Powell's *Linguistic Families of North America*, a model of philological taxonomy. In the last named paper the stocks of Mexico are not mentioned, but in the three works before us there is a starting point for systematic treatment of the tribes of that republic, in which the American Indian population is ten times greater than it ever was within the boundaries of the United States.

Orozco y Berra's list is valuable in that it assembles the names to date. The Bureau of American Ethnology has made an exhaustive synonymy of the United States and Canada, containing many thousands of terms; but there are duplicates, lost tribes, and those whose linguistic affiliations are not known, so that one-half of Orozco y Berra's long catalogue will eventually disappear.

Brinton's work is far in advance of anything before or since on the linguistic families of Mexico, and it is a pity that the author did not go a step further in the adoption of Major Powell's spelling of all family titles. I propose now to take that step and offer the following revision of Pimentel's table which makes the error that generic names shall connote all that the genus includes. A

denotive name is all that we need, coupled with a systematic spelling which shows on its surface whether a tribe, a speech, or a linguistic family is intended. I desire here to acknowledge the assistance of Dr A. S. Gatschet, without whose coöperation I should not venture to propose the scheme.

LINGUISTIC FAMILIES OF MEXICO

Pimentel's List.

Apache
Chontal
Guaicura y Cochimi-Laimon
Hauve
Matlalzinga ó Pirinda
Maya-Quiché
Mexicana
Mixteca-Zapoteca
Otomies
Seri
Sonorense Ópata-Pima
Tarasca
Totonaca
Zogue-Mixe

List Proposed.

Athapasean
Zapotecan (uncertain)
Yuman
Hauvan
Otomian
Mayan
Nahuan
Zapotecan
Otomian
Serian
Piman (or Nahuan)
Tarascan
Totonacan
Zoquean

The Apache are stragglers into northern Mexico. Chontal is a term of reproach and should not be used for a family designation.¹ Guaicura y Cochimi-Laimon is connotive, and the family title Yuman must take its place.² In Matlalzinga ó Pirinda we have the choice of two names, of which the latter is preferable, but this group is Otomian.³ Mayan is the simplification of a double name. Nahuan, the most important family in the Western Hemisphere, is the southern branch of Buschmann's Uto-Aztekan (1859; also Gatschet, 1877, and Brinton, 1891). As the matter now stands, there are the Shoshonean tongues for the United States, the Piman for the Sonoran area, and the Nahuan

¹ Brinton, *American Race*, 1891, p. 146.

² Turner, Latham, Gatschet, in Powell, *Indian Linguistic Families*, 1891, p. 136.

³ Brinton, *op. cit.*, 1891, p. 136.

for the great southern group. They may be called separate families, or regarded at present as sub-families. The term Aztekan may be discarded in this connection, since it mixes ethnic and linguistic matters. The Serian has hitherto been regarded as a part of the Yuman family, but recent investigation of linguistic material collected by Mr McGee shows it to be clearly an independent stock. The other names proposed offer no difficulties.

ORIENTAL INFLUENCES IN MEXICO

By WALTER HOUGH

Putting aside the mythical or problematic accounts of ancient landfalls, which to be sure are a fascinating field of conjecture, firm ground is reached at the period when the Spaniards governed the Philippines as a dependency of Mexico.

In former times several waves of Malay colonization swept over the Philippines, displacing one another and the original population of woolly-headed Aetas, but later the Chinese overran and conquered the islands. After a time the Chinese yoke was thrown off by the Filipinos, who, being undisturbed for many years, became inert and fell easy prey to the land-grabbing Spaniards of the sixteenth century. Sebu was taken in 1564-65 and Manila in 1571, fifty years after the discovery of the islands by Magellan.

Early in his reign Philip II saw that voyages to the Orient could better be made from New Spain. In 1545, Ruy Lopez de Villalobos was sent from Mexico, but his expedition, though it reached Sebu, was unsuccessful. Then Philip sent Miguel Lopez de Legaspi, a Mexican, who sailed from Navidad in 1564 by the middle route.

Legaspi was a navigator and warrior of the stern stuff of the age—the Dewey of 327 years ago on the same scene—and to him the Spanish Crown ever owed the Philippines. An important result of Legaspi's expedition was the discovery of the route back to Mexico. Contrary to orders, one of the ships of the expedition, commanded by Alonzo de Arellano, turned back from the Philippines and sailed northward to the islands north of Japan, crossed to the Pacific coast off Columbia river, sailed

southward, and brought up at the port thereafter to receive the golden stream of the East on its way to Spain.

Other complications also made it almost imperative for the Spaniards to reach the Philippines through Mexico. The contests between them and the Portuguese for the possession of the earth had resulted in the famous division of Pope Alexander VI at the beginning of the sixteenth century. This cut off the Spaniards from the former route to the East, when the discovery in 1520 of the Straits of Magellan by that great navigator opened another route, which after several trials proved long and unsatisfactory, and the sailing from Mexico was decided on.

In 1575, Guido de Labazarries was made governor of the Philippines, and from this time the islands were ruled by the viceroys of Mexico. Later the Spanish Crown resumed direct control and appointed governors from the mother country, but commerce was carried on with the Philippines until the separation of Mexico from Spain.

It is an important fact that one of the first cares of Labazarries was the establishment of trade and commerce between China and Manila. This commerce, which was only interrupted by events, had been carried on for centuries, bringing many Chinese traders from the mainland not over 460 miles away.

Many references by De Morga to the commerce carried on between the Philippines and New Spain show that the interchange of products was begun early and that Mexico and the Orient were closely connected.¹ The people of Mexico in this way became familiarized with the products of the East before a similar state of affairs prevailed in Europe, and the going and coming of the viceroys, priests, soldiers, sailors, and traders could not have failed in introducing to Mexico useful plants, manufactures, etc., that have come to be regarded as indigenous products.

¹ *The Philippine Islands*, by Antonio De Morga. London (Hakluyt Society),

Manila has long been an emporium of commerce. De Morga¹ says: "The merchants and traders form the greater part of the residents in these islands, on account of the quantity of merchandise which flows in to them (in addition to the produce of the country) from China, Japan, Maluco, Malacca, Siam and Camboja, Borneo, and other parts, with which they make their ventures, and every year embark them in ships which sail for New Spain." The same authority gives a general account of the articles forming the basis of the trade, and the list is interesting as showing the great variety which might be selected for trade with New Spain.

This commerce so increased that it worked injury to the trade between Spain and her possessions in Peru and Mexico. In 1599 it was suggested, and later acted on, to limit the amount of Mexican money to be used in the Philippine trade in any one year to \$500,000. Just how effective this law was and how much it hampered the free movement of commodities between the countries it is difficult to gather. Perhaps like the prohibition of government officers engaging in trade, it was a good thing if enforced.

It is true in any case that each year for centuries two vessels were dispatched from Manila to New Spain, one a stately galleon, the other a large ship as a convoy on which prohibited goods were carried in a clandestine way. At the time of the arrival of these ships they were joined by other craft coming from Peru and Chili, and it was customary to hold a great fair for thirty days at Acapulco, where commodities from all parts of the world were bartered. Thus Acapulco became the great distributing point whence the commerce of the East was sent to South America. Acapulco, Mexico, and Vera Cruz were the cities in Mexico directly touched by this trade.

During De Morga's time duty of three percent on the merchandise brought from China amounted to \$40,000, and the two percent duty on goods shipped to Mexico reached \$20,000, while the duty from Mexico to the Philippines was \$8000.

¹ *Ibid.*, page 336.

The population of Manila, like that of most seaports having extensive commerce, was of very mixed character, the bulk of the foreigners being Chinese, who, while viewed with suspicion, were recognized as being indispensable because they were industrious workers at all employments and demanded small wages. The same is true at this epoch in the Philippines, and there seems to be as little reason for excluding the Chinese now as there was in the sixteenth century. Owing to trouble with the Japanese in 1597, "the governor sent to Japan all the Japanese who were settled in Manila (and they were not a few) and those who came in trading ships."¹ The Chinese have maintained their hold in the Philippines to the present day in spite of various massacres and the stringent enactments to which they have been subjected. There has been a decided mixture of Chinese blood with the natives, forming the class known as *mestizos*.

The question may be asked, then, whether the centuries of communication between the East and Mexico have had any marked effect upon either. Perhaps the first marked intrusion of the East into Mexico is to be found in the flora of the country. It was the custom of the priests who invariably accompanied or closely followed the Spaniards on their conquests, to select plants, seeds, and other curious objects for introduction into other lands and as presents to royalty. The world is greatly indebted to the missionary fathers for the dissemination of a multitude of useful and beautiful plants whose presence in various unexpected localities has often perplexed botanists.

The Spanish leaders of explorations were not less active in the search for strange products to illustrate to the rulers the remarkable character of the countries which they gained for Spain. That the Pueblo Indians of our Southwest early possessed sheep, horses, cattle, peaches, wheat, etc., is due to the friars of the seventeenth century, to whom also may be attributed many of the plants of the East now thoroughly at home in Mexico and South

¹ De Morga, *op. cit.*, page 86.

America. The return of the viceroys and merchants, who had made fortunes in the Philippines, was no doubt likewise a potent factor in enriching the flora of Mexico by the plants brought from the Orient to beautify their estates.

Wherever the Chinese go they carry with them their native country. In our cities, whenever feasible, they grow their favorite lily, water-chestnut, and gourds. In one of the southern states a farm is devoted to raising and canning Chinese vegetables for the use of our Chinese colony. This gives opportunity for the escape from cultivation of plants that later on may spread widely. There is no reason to doubt that in Mexico this process has gone on for a long time.

With these statements in view it does not seem anomalous to find the cocoanut on the coast of Mexico with the attendant manufactures connected with the tree, as houses from the trunk, thatch from the dead leaves, cups from the nut, toddy from the flower-stalk, and various other products. The toddy is called *tuba*, a Tagal word, and its collection and preparation and the other arts grouped about the cocoanut palm might be transported bodily from Colima to an island in the Pacific without jarring the scene.

The presence in America of the banana which, like the cocoanut, has been fancifully accounted for as the result of some prehistoric dissemination, bears witness to the contact with the East. The banana, which can be propagated only by living plants, came to Mexico by way of Manila within the last 300 years and has been widely distributed over the tropics of America. The same is true of the plantain.

The mango, the most popular fruit in Mexico as well as one of the most delicious, is also an immigrant from the Philippines. This handsome and useful tree is a native of India, and is now grown in parts of Mexico having suitable climatic conditions. Its dense, dark green foliage gives a grateful shade around the palm-thatched jacals of the Indians in the tropic and subtropic-

landscapes of Mexico. There are a number of varieties of the mango in the temperate regions, the one most prized being the large yellow subacid kind called "mango de Manila."

Another East Indian fruit, called by the Mexicans *piña-nona* (*Monstera deliciosa*), is naturalized in the tropic and subtropic zones of Mexico and is frequently offered for sale in the markets.

The list of useful plants introduced from the East into Mexico, probably by way of the Philippines, could be extended, but enough has been presented to show the strong current which began to flow at the close of the sixteenth century. Of ornamental plants and trees also there are not a few naturalized in Mexico. Among these may be mentioned the Chinese umbrella tree, the pepper tree (*Schinus molle*), whose habitat is Australia or India, but which flourishes in Mexico as does the ailanthus in the United States. In the beautiful plazas, a graceful feature of every town and city, one sees rare exotics whose home is in the East.

The debt of the Philippines to the New World must be acknowledged in this connection. The century plant, the prickly pear, and the pineapple came from Mexico, the last furnishing fiber for the *piña* cloth for which the Philippines are famous. The Spaniards early sought to introduce the grape and the olive, fig, pomegranate, and other trees from Castile into the Philippines. Only pomegranates and grapes were successful, and it was found that green vegetables of Spain did not produce seed, an experiment showing lack of judgment.

If, as it seems true, Mexico is indebted to the East for many plants, one should look for traces of that contact among the arts of the country. Search for objects of this kind is one of the most difficult of undertakings. The disintegration of aboriginal populations under contact with the higher races leaves little except the thrum ends of former arts, giving scanty material for restoration.

A number of evidences have been observed, one of which, the making of *tuba*, or palm wine, has been noted. Three kinds of rain-coats were seen in use in Mexico by the writer: (a) the coat

made from pieces of natural texture out of the spathes of palm sewed together: (b) the coat consisting of an oblong mat of palm leaves which may also serve as a bed or be rolled up and carried on the back, and (c) the coat which outside resembles a thatch, the inside showing the construction by an ingenious looping and knotting of strips of palm leaf with or without attachment to a cord. This last coat envelops the body, extending down below the knees and is tied about the throat. The resemblance of this garment to those of China and Japan is striking, and is not superficial, having points of similarity of construction which appear to indicate that this particular variety of rain-coat was borrowed from the East. In the Philippines there are worn palm rain-coats apparently similar to those of China and probably introduced by the Chinese, since the Malays do not employ this form.

Certain grooved stone mauls or beaters for the manufacture of bark cloth or paper found in Mexico, seem to point to the migration of an art to America from Polynesia, before the Conquest, by way of eastern Asia across Bering strait. The stepping stones are the Indo-Pacific islands, Japan, the northwest coast of America, and southeastern Alaska, Mexico, Central America, and South America. There seems also to have been an introduction of the grooved club of wood (*tapa* beater) into Costa Rica and Honduras from African sources through slaves, who brought into America the *marimba*, a series of wooden tablets with gourd resonators mounted in a frame and struck with hammers to produce music. On the other hand some forms of the Mexican *marimba* are similar to the Malay instrument in not possessing resonators, which shows derivation from the East.

A discussion of the origin of the musical bow has recently appeared. It is generally agreed that the musical bow is not an American invention, and that its presence in the west may be attributed to importation from Africa. It is likewise found among the Malays, who also probably derived it from African peoples. Curiously the fact is brought out that no stringed instruments

were known to the American aborigines prior to the Conquest,¹ so that all instruments of that character found among the native people may be assigned to sources in the Old World.

The *machete* resembles the jungle knives of the East, and it is possible that there may be kinship or community of origin. The introduction of iron into Mexico was by the Spaniards, but Eastern implements of iron may have reached portions of Mexico before those of Spain.

The primitive rope-twisting tool in use in Mexico may be from the Philippines. This device consists of a billet of wood revolving by one end on a movable axis held in the hand, the revolution of the billet twisting the thread attached to it near the axis. The wide range of this simple twisting appliance renders it difficult to trace its origin, but there is strong presumption that it came from the East into Europe or Mexico.

The houses of the Indians in some localities of Mexico show marked traces of foreign influence. For instance, at Ometepe, near the western coast, where there are many negroes, the houses are circular after the African style. It is likely that all the circular houses in Mexico are of African origin, as the native houses are rectangular. The jacals of the Totonacos of Jalapa, with their high thatched roofs having the profile of a truncated pyramid, resemble strikingly the houses of the East Indies, but it is hardly possible to say that the architecture is not indigenous.

A few American games have affinity with those of the Orient. Mr Culin has traced the analogue of the Hindu *pachise*, under the name *patole*, from the ancient Aztecs to the existing Pueblos of New Mexico.

It is well known that various foreign elements have been incorporated into the population of Mexico during historic times. The central plateau shows the marked effect of immediate contact

¹ O. T. Mason: *Geographical Distribution of the Musical Bow*, American Anthropologist, Nov., 1897. Henry Ballour: *The Natural History of the Musical Bow*, Oxford, 1899.

with the Spaniards in the deterioration of the dominant tribes of that region and their fusion into the great complex called linguistically "the Mexican family." On the east and west coasts the tribes are less modified by Spanish influence, and in the sierras and south of latitude 20° the natives remain vigorous and but slightly modified, some tribes in the mountains preserving their primitive state.

In the tropical region one finds the introduction of foreign races most noticeable. The difficulty of securing native labor to work on the plantations, railroads, etc., has led to the employment of great numbers of Chinese, negroes from the West Indies, and Kanakas or other Polynesians. During the colonial period the plantations of Mexico were worked by slaves from every clime, felons, and impressed labor from the native tribes. It is necessary to take into account the effect of these intrusions of the blood and arts of the Mexicans, and in them it is known to be of profound importance.

That there has been a grafting of Chinese and especially of Negro on the Mexican tribes is evident. The writer has observed a number of mestizos of Chinese and Mexican Indians, finding the cross virile and healthy, quite different from the Eurasians, and partaking much less of Chinese than of Mexican characteristics. As in Manila the union is always with Chinese males. The Chinese mixture is perhaps small, and the common terms by which race mixtures are known in Mexico are applied to mixtures of Spaniards, Indians, and Negroes. The names are Mestizo, Mulato, Zambo, Castigo, Morisco, Zambo prieto, Español, and Salta atras of the primary mestizos. The secondary mestizos are called Calpan mulata, Chino, Tentí en el aire, Lobo, No te entiendo, Gibaro, Ahi te estas, Albarrazaso, Cambujo, and Zambo (of the sixth blood).¹

¹ R. E. Cicero, in *Catálogo de la Colección de Antropología del Museo Nacional*, page 86.

THE STUDY OF PRIMITIVE MUSIC

By CHARLES K. WEAD

In an old number of the *American Anthropologist* (January, 1889) I have chanced on an article by Dr Boas, which has a suggestiveness and significance in a direction quite different from that considered by the author. In opposition to some then current loose theories of "alternating sounds" and "sound blindness," he pointed out the great liability we are under of misunderstanding a new word by failing to perceive the peculiar character of each phonetic element: this point he illustrated by instances from his own notebook of Eskimo words, and added that in the field-notes of even well-trained philologists their misspellings of strange words betray their own nationality. Other easily accessible illustrations we may find in the various spellings of the same name in the Index to the *Documents Relating to the Colonial History of New York*, or in the changes that English words undergo when spoken by natives of Hawaii, or in the rival spellings Chippeway and Ojibwa. Clearly the trouble comes, as Boas pointed out, from the difficulty, first, of apperceiving the elements of the word, and, second, of expressing them in proper notation. Our standards both of recognition and expression are incommensurable with those of the stranger; so the transliteration may be made approximately in various ways, and is at best imperfect even with the copious scientific alphabets.

All these remarks concerning strange words seem nowadays mere truisms; but the more obvious they seem to anyone, the more strange it should appear to him that the parallel truths concerning music are so generally ignored or even denied. The purpose of this paper is to consider some of the difficulties

connected with the hearing and noting of strange music, and some helps in overcoming these difficulties.

The observer of savage or other strange music, *e. g.* a song, hears a succession of sounds differing in pitch, duration, or force, or probably in all three respects and in others not necessary now to consider; and within the limits of the voice the possible variation in each characteristic is continuous,—the sound may be of any force, length, or pitch; so the sounds not being limited in number like consonants or chemical atoms, it is a matter of extreme difficulty to observe and estimate them quantitatively, and, if estimated, the observer has probably no suitable notation for recording his results. At present the familiar symbols for noting the force and length of the notes are generally sufficient to mark the rhythm as closely as it can be observed; but at Chicago some savage rhythms completely baffled the musicians who attempted to note them down. To give the pitch, the general practice of ethnologists seems to be to learn the song, fix on the keynote from the feeling instinctive to a European musician that the notes group themselves in familiar relations around one which is peculiarly a tone of repose, and then transpose the whole so that in writing on the staff there will not be many sharps or flats in the signature: at some point in the process all the notes that do not belong exactly to the scale on the chosen keynote, with its limited number of steps, are changed to the nearest scale-note, though sometimes accidental semitones are allowed. The song thus noted contains also the observer's errors, and his interpretations; it has now many features of the dress of civilization, but its savage nature is not completely disguised: so, to permit it to enter good society, Mr Sousa will fit it out with full harmonies for a brass band¹; or (dropping the figure) Professor Stumpf² will demand that it be "intelligible as music," and arbitrarily change the notes as published so as to satisfy his notions of key. Why

¹ *National, Patriotic, and Typical Airs*, 1890.

² *Flüchtig für Musikw.*, 1892.

not as well try to make Zulu words "intelligible as German" from the collocations of the letters in transliteration?

The use of a phonograph has often been proposed to avoid the errors of field observation and to allow of the transcription of melodies under conditions favorable to scientific accuracy. It is found, however, that great care is needed to avoid introducing various new errors; and unless the driving power is uniform the determination of pitch is very uncertain. For this reason the cylinders of Zulu melodies collected by Dr Fewkes in the early days of field phonographic work were imperfect, and Mr Gilman's thorough examination of them and his published transcriptions (1891) are unsatisfactory as to results, though his method of work was distinctly in advance of any former work. In this connection it is pertinent to add that travelers who get phonographic records should aim to obtain several records of any important song from a single individual, and other records of the same song from other people; only by a comparison of such supposed duplicates will it be possible to tell how much constancy a tune has and what its average constitution is.

If any reader of these pages has the opportunity to observe unusual music, as among Indians, Negroes, uncultivated singers, etc., his observations will be far more interesting and valuable from a scientific point of view if he can adopt two suggestions:

First, train his ear to recognize and *estimate* fractions of a semitone; this may conveniently be done as follows: Paste on the finger-board of a violin a paper scale divided into equal parts, as tenths of an inch, and determine by ear or by comparison with a well-tuned piano at what points the strings must be stopped to produce the notes of the chromatic scale; the average distance between these points will be about half an inch; since, however, the string may be stopped at any intermediate point, notes not in the scale can be produced and their pitch fixed to a tenth of a semitone; so the ear may be trained to estimate both minute intervals and deviations from the piano scale: a bit of wood will be

better than the broad finger for stopping the string with exactness. One German musician trained himself to estimate with certainty at public performances deviations of a tenth of a semitone.

The second suggestion is that the observer record his results, not on the ordinary staff with its lines sometimes three and sometimes four semitones apart, but on a chromatic staff having thirteen equally-spaced lines to the octave; for convenience those lines may be drawn heavier which correspond to the white keys of a piano or the syllables of the diatonic scale; all sounds agreeing exactly in pitch with piano notes will then be written on the lines, while in the spaces notes of intermediate pitch will be properly interpolated. This staff or chart, used by the phonologist Steele a century ago, and invented by patentees and scientific men several times since, is the only one fitted for scientific use in the study of non-harmonic music, for it complies with the demands both for mathematical precision and for musical intelligibility, and the records on it can readily be translated into sound, as with the violin or voice, or to the nearest semitone with the piano. To familiarize oneself with this staff, it is a good exercise to lay down on it the "just" diatonic scale, the Siamese scale of seven equal steps, and any other curious scales the student may know of.

In conclusion: It is sometimes asserted that the deviations of, *e. g.*, Indian music from our scale are immaterial and of no significance: perhaps so, but the people who say so furnish no facts, and ask to have their dictum accepted. Unquestionably the deviations of some Negro songs and of many Oriental tunes are material and intentional, and are as significant of history and relationship as the silent letters in many English words. If, however, the deviations in the tunes of any people should be proved to be non-significant, we shall learn therefrom that the enjoyment of music is not generally dependent on that most modern demand of the harmonic musician,—accuracy of intonation,—and that the simple music of primitive peoples does not need the firm

harmonic foundations of German folk-song or modern music. In either case we may be sure the careful study of these deviations will not only train the observer, but ultimately bring new and valuable truths to light. And in all work on alien music it is to be hoped the field-worker will take warning from the experience in a similar field of the distinguished ethnologist cited at the beginning of this paper, and strive always to obtain and to report the objective truth, free from all subjective interpretations.

THE NEW-FIRE CEREMONY AT WALPI

By J. WALTER FEWKES¹

INTRODUCTION

Among the Hopi the making of the new fire in each November is one of the most important ceremonies in their ritual. The collection of rites of which the New-fire is the most striking is called *Wüwütcimti*, from one of the religious societies prominent in its celebration. Every fourth year these November rites become very elaborate, and are then called *Naacnaiya*, from the importance of the initiation of novices into the priesthoods at that time. Both the elaborate ceremonials and the abbreviated annual New-fire rites have elsewhere² been described, but not in the exhaustive way that the subject merits. As the author witnessed the abbreviated rites in November, 1898,³ under favorable conditions, he has attempted a new article on the New-fire ceremony, with considerably more detail than has yet been given.*

¹ These studies were made under the auspices of the Bureau of American Ethnology.

² "Naacnaiya," *Year. American Folk-lore*, 1892. "Wüwütcimti," *Proc. Biol. Soc. Nat. Hist.*, 1894. The word *Wüwütcimti* is interpreted to mean the ancient dance, or ceremony of the wise ancients. Old masks, the names of which are lost, are called *wüwüti*, "ancient heads."

³ This was the first time that the author witnessed these rites among the Hopi Indians. The elaborate notes on the *Naacnaiya*, published under joint authorship with the late A. M. Stephen, were made by the latter, as were those on the abbreviated New-fire published after Mr Stephen's death. Although the author has repeatedly expressed his indebtedness to this able student of Hopi ceremonies, he again takes opportunity to call attention to the services rendered to science by this pioneer in Hopi ethnology.

⁴ There is no New-fire ceremony at either Sitcomovi or Hano, but probably all the other Hopi pueblos observe the rite. It is commonly stated that in former times the elaborate New-fire ceremony, or *Naacnaiya*, was celebrated every year, but of late it occurs only at stated intervals.



DANCE OF THE TATAUVAMU.

PERSONNEL OF THE NEW-FIRE CEREMONY

Four societies of priests, known as the *Tataukyamâ*, *Wûwûtcimâ*, *Aaltâ*, and *Kwakwantâ*, unite in the celebration of the Walpi New-fire ceremony. The public dances are conducted mainly by the former two, whose actions are of a phallic nature. These two act as chorus in the kiva when the fire is made, but the sacred flame is kindled by the latter two societies. All four organizations are considered powerful, but the fact that the name of the ceremony is practically the same as that of one of the priesthoods does not mean that this society is the most prominent. Hani,¹ chief of the *Tataukyamâ*, directs the whole society, and Anawita, chief of the *Kwakwantâ*, personates the Fire-god, in whose honor the most important part of the celebration is performed.

KIVAS OCCUPIED IN THE NEW-FIRE CEREMONY

Four sacred rooms were occupied in this ceremony. The *Tataukyamâ* met in the *Moñ-kiva*, which was the only chamber in which fire was kindled with the rotating fire-drills, as elsewhere described. The *Wûwûtcimâ* society met in the *Wikwaliobi-kiva*; the *Aaltâ* in the *Al-kiva*, and the *Kwakwantâ* in the *Tivato-kiva*. The *Nacab-kiva* was not used in the New-fire ceremonies, but rites were conducted simultaneously in all the others, especially on the last day and night.

Sticks with attached feathers, called *nateis*, were displayed at the entrances of the occupied kivas to indicate that ceremonies were in progress within, and duplicates of the same, called *ketsakwa*, were used in several kiva rites, and were carried by some of the chiefs in the processions and public dances as badges of office. The *nateis* of the *Moñ-kiva* and *Wikwaliobi-kiva* were sticks, about a foot long, to the ends of which bundles of hawk-feathers were attached. The *natei* at the entrance to the kiva in

¹ Hani was appointed by the Indian Agent as Governor of Walpi, but Turnoa is the Hopi *himself* or governor.

which the *Kwakwantá* society met, was an agave stalk, at one end of which were attached several crane-feathers and a circlet of cornhusks. The chief of this society used a similar object in the rites about the medicine-bowl, beating time with it on the floor as an accompaniment to the songs. These *nalcis*, with one exception, were set in the straw matting of the kiva hatches on the day of Assembly, and remained there during the ceremonies.¹ The *nalcí* of the *Aaltá* society was not displayed on the kiva hatch on Assembly day, but was first seen on the day called *Komoktotokya*. It consists of a cap-shaped object of basketry, to which are attached two small whitened gourds in imitation of horns, and closely resembles the horned cap worn by novices in this society.

CEREMONIAL DAYS OF THE ABBREVIATED NEW-FIRE RITES

There was remarkable uniformity in the dates on which the *Wáwútcimti* was celebrated at Walpi in 1892, 1893, and 1898, which were the same and as follows: November 8, *Tcotcoñyuñya*, Smoke assembly; 9, *Tiyuhava*, Announcement; 10-12, ———; 13, *Yuñya*, Assembly; 14, *Sockahimá*, All rest; 15, *Komoktotokya*, Wood gathering; 16, *Totokya*, *Totokpi*, *Piki* making; 17, *Tihuni*, Pudding-feast representation (*Pigumnovi*).

For several days before the ceremony began, large quantities of wood were piled near the kiva hatches, and after the rites began this fuel was carried down into the rooms and continually fed to the flames of the new fire by an old man who never left his task. The flames of the new fire were regarded with reverence; no one was allowed to light a cigarette from it or otherwise profane it.

NOVEMBER 8—TCOTCOÑYUNYA OR SMOKE ASSEMBLY

The chiefs of the four societies assembled for their smoke-talk in an old house of the *Asa* clans, east of the *Wikwaliobi* kiva.

¹ The *nalcí* is generally put in position at sunrise and is taken down at sunset, a pinch of meal being cast toward the sun when this is done.

This house is owned and occupied by an old woman named Wukomana, the sole female survivor of the *Asa* clan in Walpi, and during the smoke she slept in one corner. It is highly significant that this preliminary gathering occurred in this room, considering that the son of the occupant is chief of the society from which the New-fire ceremony takes its name, and which met in the adjoining kiva.

The smoke assembly of the New-fire chiefs was formerly held in one of the dilapidated rooms¹ west of the kiva mentioned, near the head of the stairway trail. When this room became so dilapidated as to be uninhabitable, the meeting-place was moved to a house on the other side of the kiva, now occupied by the old woman, Wukomana; but this room cannot be used for many more years, and will probably be abandoned at the death of the present occupant.

The following chiefs participated in the smoke assembly in this room in 1898: Hani, *Tataukyamá* chief, *Piba* clan; Anawita, *Kwakwantá* chief, *Patki* clan; Suñoitiwa, *Wuwutcimá* chief, *Asa* clan; Tuwasmi and Kotka,² *Aaltá* (dual) chiefs, *Asa* and *Bear* clans.

In the southeastern corner of this room there is an ancient fireplace around which the chiefs gathered, sitting in a semicircle, Hani at the extreme right, next to him Tuwasmi, then Kotka, Suñoitiwa, and, on the extreme left, Anawita. Hani made a small fire, and Anawita acted as a pipe lighter. Each chief brought his bag of native tobacco, as well as his own pipes, some of which were of most ancient pattern. The gathering took place shortly after sunset.

After the chiefs had smoked for some time, Hani took a ball

¹ The writer has been told that Hani's mother, Teiwuqti, once lived in this room. The smoke assembly in 1893 was held in her home in Sitcomosi.

² In the other presentations of the New-fire ceremony which have elsewhere been described, Kotka was not old enough to take this part, hence Winuta officiated for him. Winuta, however, belongs to the *Pakab* people; one of the dual chiefs of the *Aaltá* must be the Bear chief, who is Kotka.

of cotton string and measured off four equal lengths which he twisted together and tied a yellow-bird feather at the end. This string with attached feather is called *pu'tabi*, and on the morning of the following day, at the faintest dawn of light, it was laid by Hoñyi in the trail at the narrowest point of the entrance to Walpi. Hani measured off a second long string and several smaller ones to which he tied feathers and laid them on the basket tray of meal before him. The other chiefs then opened their feather boxes, and each made *nakwakwocis*, which, before placing in the tray, they held to their mouths, breathing an inaudible prayer as they did so.

After all had made these prayer-offerings and tied up their feather boxes, Anawita lighted a pipe and passed it to Hani, who smoked for some time upon the offerings and puffed in sequence to the cardinal points. Hani then passed the pipe to Tuwasmi, who smoked on the prayer-offerings and handed the pipe to his neighbor, Kotka, saying, as he did so, "*Inaa*" ("My father"). Tuwasmi may be ten years or more older than Kotka, but the latter responded, "*Itii*" ("My son"). After a long smoke, Kotka passed the pipe to Suñoitiwa with the words, "*Ikwa*" ("My grandfather"), and this chief handed it in turn to Anawita. Prayers followed the smoke, beginning with Hani, who held the basket tray containing the stringed pine-needles and the long cotton strings in his hands as he prayed. Hani was followed by Tuwasmi, to whom he handed these objects. Shortly afterward the basket tray with its contents was passed to Kotka, and then to Suñoitiwa, who handed it to Anawita, and as each chief held the offerings he fervently prayed in a low tone. At the close of the prayers each chief took a handful of meal and left the room. Anawita said the ceremony was over, and as we passed through the Walpi court he cast a handful of meal over the side of the mesa, near the *Nacab-kiva*.

Hani gathered the offerings which had been prayed over, as above described, and took them, with a lighted pipe, to Hoñyi, the

town-crier, who was sleeping in a nearby house. These objects he handed to Hoñyi with the understanding that in the morning he should announce the advent of the New-fire ceremony.

NOVEMBER 9—TIYURAVA OR ANNOUNCEMENT

At early dawn Hoñyi went to *Húlciovi*, the narrow place in the mesa just before one enters Walpi, and laid one of the long strings (*pu'tabi*) in the trail, sprinkling there a little meal, and casting a pinch toward the place of sunrise. At the same time he said a prayer, "Our Sun, send us rain." The remainder of the stringed feathers, which Hani had made on the night of the smoker-talk, he carried to the roof of Saliko's house and placed in a radiating position corresponding with the six cardinal points. He cast pinches of meal toward the place of sunrise, and just as the sun appeared above the horizon made the official announcement of the New-fire ceremony in a loud voice. This announcement was not only a summons to the members of the societies to assemble, but also an invocation to the gods to send the desired snow, ice, and rain to water the farms. It was uttered in rhythmic cadence, with verbs prolonged, and could have been heard even among the mesa foothills.

A free translation of the announcement is somewhat as follows:

"All people awake, open your eyes, arise!
 Become *Talaheya* (Child of Light), vigorous, active, sprightly.
 Hasten, Clouds, from the four world-quarters.
 Come, Snow, in plenty, that water may be abundant when summer comes.
 Come, Ice, and cover the fields, that after planting they may yield abundantly.
 Let all hearts be glad.
 The *Wuwutimti* will assemble in four days.
 They will encircle the villages, dancing and singing their lays.
 Let the women be ready to pour water upon them,
 That moisture may come in abundance and all shall rejoice."

NOVEMBER 13—YURVA OR ASSEMBLY

The first of the five days' continuous rites of the New-fire ceremony is called *Yuñya*, the day on which the priesthoods assemble in their respective kivas. This is not, however, called by the Hopi the first day of the ceremony, but is always referred to as that on which the chief officially enters his kiva.

Early in the morning of Assembly day the writer visited the Walpi kivas and found the chiefs present in all except the *Nacab-kiva*, which is not used in this ceremony. The others had been swept and small piles of twigs had been carefully laid in or near the fireplace ready to be ignited. A quantity of fuel had also been gathered and stacked on the kiva roof in preparation for the coming ceremonies.¹

Just before sunrise Hani entered the *Moñ-kiva*, carrying his bag of fetishes on his arm, and shortly afterward Suñioitiwa came to his kiva and set his standard (*natei*) in the kiva hatch. Anawita soon placed his *natei* in position, but that of the *Aaltu* was first seen on the kiva entrance two days later.

Early in the morning Hani passed through the pueblo telling all the men to come to their respective kivas, and, as they responded, each, with the exception of members of the *Kwakwantu*, brought with him an ear of white corn. Hani also sprinkled valley sand over the floor of the kiva both on the upraise and on the ceremonial part² of the room.

Several important rites were observed and ceremonial objects noted in the kivas on Assembly day, among which the following may be mentioned: 1, An altar to the six directions, at sunrise, in the *Moñ-kiva*; 2, An altar to the six directions, at noon, in the *Tcivato-kiva*; 3, Kindling new fire in the *Moñ-kiva*; 4, Visits of the societies to the shrines of *Tuwapoñtumsi*, *Talatumsi*, and the ancient site of Walpi.

¹ After the new fire is kindled it is not allowed to become extinguished in any of the kivas until the final day of the ceremony.

² That portion of the kiva floor east of the ladder is slightly raised, hence its name.

1. The Six-directions Altar in the Moñ-kiva

Hani made the six-directions altar on the floor of his kiva at sunrise of Assembly day. A low pile of sand was placed near the fireplace, and six radiating lines of meal were drawn upon it. The medicine-bowl (*ndkwipi*) was deposited at their meeting-point, and charm liquid poured into the receptacle. The details of this rite were not observed, but it was probably very much simpler than that of the *Kwakwantú* chief in the *Tivato-kiva*. In the course of the day Hani tied pine-needles to short strings to use in the sacrifices to the new fire on the evening of this day, as later recorded.

2. The Six-directions Altar in the Tivato-kiva

About noon Anawita prepared six cotton strings, to each of which he attached pine-needles for use as sacrifices to the new fire, as will later be described.

Shortly after noon Cikuli, who acted as medicine-chief in the *Kwakwantú* society, began the installation of objects of the medicine altar to the six cardinal points. He first emptied on the kiva floor, between the fireplace and the western wall of the room, a bagful of common valley sand, and drew upon it, with meal, six lines, radiating from a common point, corresponding to the six cardinal directions, north, west, south, east, above, and below.¹ These lines were made in a sinistral circuit beginning with the north, and after having made them Cikuli deposited a handful of sacred meal at their union, and placed on it the medicine-bowl, which was of rectangular form with a terrace on each of the four sides of the rim. It was without a handle, and on the middle of the inside were painted a frog, and four tadpoles, radially arranged, each facing an angle of the bowl.

The floor west of the ladder is that where the altar is placed and the most important ceremonials are performed.

¹ They are not, however, the true cardinal points, as has elsewhere been indicated, but correspond to solstitial directions.

While Cikuli was arranging the bowl, Anawita unwrapped the birdskins and other fetishes which later were placed at or near the ends of the meal lines. He gave Cikuli directions regarding the disposition of these objects as the arrangement of the altar progressed.

Cikuli first arranged the six ears of corn at the extremities of the lines of meal, setting yellow corn at the north, blue at the west, red at the south, white at the east, black at the above, and speckled at the below—so placed that their tips pointed inward, almost touching the sides of the bowl. He then laid to the left of the ears of corn a number of birdskins, corresponding to the cardinal points, as follows: North, *Tawamana*; West, *Lukâtekana*; South, *Murinyawe*; East, *Posiwn*; Above, *Tokutcka*; Below, *Hotcko*. To the right of the west ear of corn he placed a fragment of a stalactite, and a white stone disk about the size of a half-dollar. At one side of the south ear he deposited a small green stone implement, while on the other side of this ear he placed a section of a crinoid stem. Near the tip of the eastern ear he put a spherical green stone about the size of a marble. Near the black corn corresponding to the direction called the above he placed a stone object resembling a spearpoint, and near the tip of this ear a small stone cylinder.¹

Cikuli next filled the medicine-bowl about half full of liquid (water?), pouring it in on the four sides in turn, making a pass each time to the corresponding cardinal point, and adding two passes, one for the above, and another for the below. This completed the preliminaries of the Six-directions altar of the *Kwakwantá*.

While this altar was being made there were but three persons, besides myself, in the kiva, namely, Anawita, *Kwakwantá* chief; Cikuli, Medicine chief; Tcali, Smoker chief. All these chiefs had washed their heads earlier in the morning, as is customary in

¹ These medicine stones are identical with those which are often found in ancient graves in Arizona.

preparing for altar and other rites, and the ceremonies began directly after the altar had been made. Tcali first lit the pipe and passed it to Anawita with the words, "Iuaa" ("My father"), and Anawita responded, "Itii" ("My son"). As the pipe was passed from one priest to another it was held near the floor, with bowl foremost and stem horizontal. Anawita blew great puffs to the cardinal points and into the medicine-bowl, after which he handed the pipe to Cikuli, who followed his example, and returned the pipe to Tcali, the Smoker chief, who smoked a little, cleaned the pipe, and then laid it on the floor by the fireplace.

After the formal smoke Anawita began a song, took an agave rod with attached cornhusks and feathers, and beating time with it accompanied the songs. As the singing progressed Cikuli slowly added to the medicine-bowl the stones which lay on the floor near the ears of corn, beginning with that at the north and following with the others in sinistral ceremonial sequence. When this was concluded Anawita gave several quick raps on the floor with his agave stick as a sign for a change in the song.

In the second song Cikuli dipped the heads of the birdskins, one by one, into the medicine, beginning with that at the north and following with the others in sinistral circuit. As he dipped the birds' heads into the medicine he dropped a little pollen at the same time into the liquid.

The third song was accompanied by rapid taps on the floor with the agave rod, and Cikuli drew a line with pollen along the northern ear of corn, and then made a circular pass over the medicine, at the same time dropping a little pollen into the bowl. As the song continued he made similar movements over the ears of corn at the west, south, east, above, and below, holding the pollen to his mouth each time before he made these passes.

At the close of this song Cikuli gathered up the six ears of

¹ Anawita is not Tcali's father, nor do they belong to the same clan. Tcali is a member of the *Pike* or Tobacco clan, consequently a Smoker chief, and his father, who now lives at Zuñi, is named Totci.

corn and laid them side by side across the medicine-bowl. During the fourth song he grasped the medicine-bowl in both hands and moved it with the corn upon it, with a twisting motion, backward and forward, keeping time with the rapid taps of the agave stick on the floor.

In the fifth song Cikuli dipped the end of each ear of corn in the liquid, in sequence, asperged with each to the cardinal points, and laid them back in their former places.

The sixth song was accompanied by a slow beating of the agave stick on the floor, and as it continued Cikuli dipped the tail of each bird in sequence into the medicine, beginning with the north and ending with the birdskin corresponding to the below. A little pollen was added to the liquid as the tail of each bird was dipped into it.

During the next song, which was the seventh in serial order, Cikuli took one of the quartz crystals from the medicine-bowl, sucked it, and handed it to Tcali, who mounted the kiva ladder, and holding the crystal in a sunbeam reflected the light into the medicine.

At the close of the eighth song Anawita prayed, and was followed by Cikuli, after which Tcali filled and lighted the pipe, which, at the close of the prayers, he handed ceremonially to Anawita, exchanging terms of relationship. Anawita smoked for some time, puffing smoke into the medicine, and later passed the pipe to Cikuli, who did the same, returning it to Tcali, the Smoker chief.

3. *Making the New Fire in the Moñ-kiva*

At 5 P.M. the *Kwakwantá*, led by their chief, Anawita, marched from their ceremonial room to the *Moñ-kiva*. Most of the members of the society were not costumed, but their chief wore a skin rug, and carried in his hand a trayful of meal on which were laid several pine-needles attached to strings. After him came Tcali bearing a cubical fire-stone (plate IV, 2) and a fire-stick, then

followed all the members of the society. As they came to the kiva hatchway each one threw a handful of meal through the opening, which struck the floor near the fireplace.

The *Tataukyamá*, who had already assembled, immediately huddled behind Hani in one corner of the *Moñ-kiva*. As the *Kwakwantá* entered the room they squatted in a group north of the ladder, and Anawita sat on the upraise of the floor near them, where two of their number held up a black blanket before him, concealing him from view. In the rites which followed Anawita personated the Fire-god. Tcali deposited the fire-stone north of the fireplace and squatted beside it with two other *Kwakwantá* members seated near him. The last of this society to enter the kiva was Hayi, who carried an agave stalk painted white, and as he stepped into the room, he drew a line of sacred meal across the middle of the raised part of the floor from the ladder to the north-eastern side of the room, and took a position near the right ladder-pole on the northern side of this line of meal. As Anawita entered the kiva he placed his tray of meal with the stringed pine-needles on the floor by the fireplace near the basket belonging to Hani.

The next society to enter the kiva was the *Aaltá* (*Alosaka*), led by one of their chiefs, Kotka, who bore a tray of meal upon which were six triple pine-needle strings. Their advent was announced by balls of meal thrown through the hatchway. The second man in the line carried the fire-board of this society (plate IV, 1). They passed on the southern side of the ladder along the western wall of the room, with the exception of the two chiefs, Tuwasmí and Kotka, who took positions by the fireplace on the southern side. Pautiwa and the two fire-makers of the *Aaltá* society deposited their fire-board to the southwest of the fireplace.

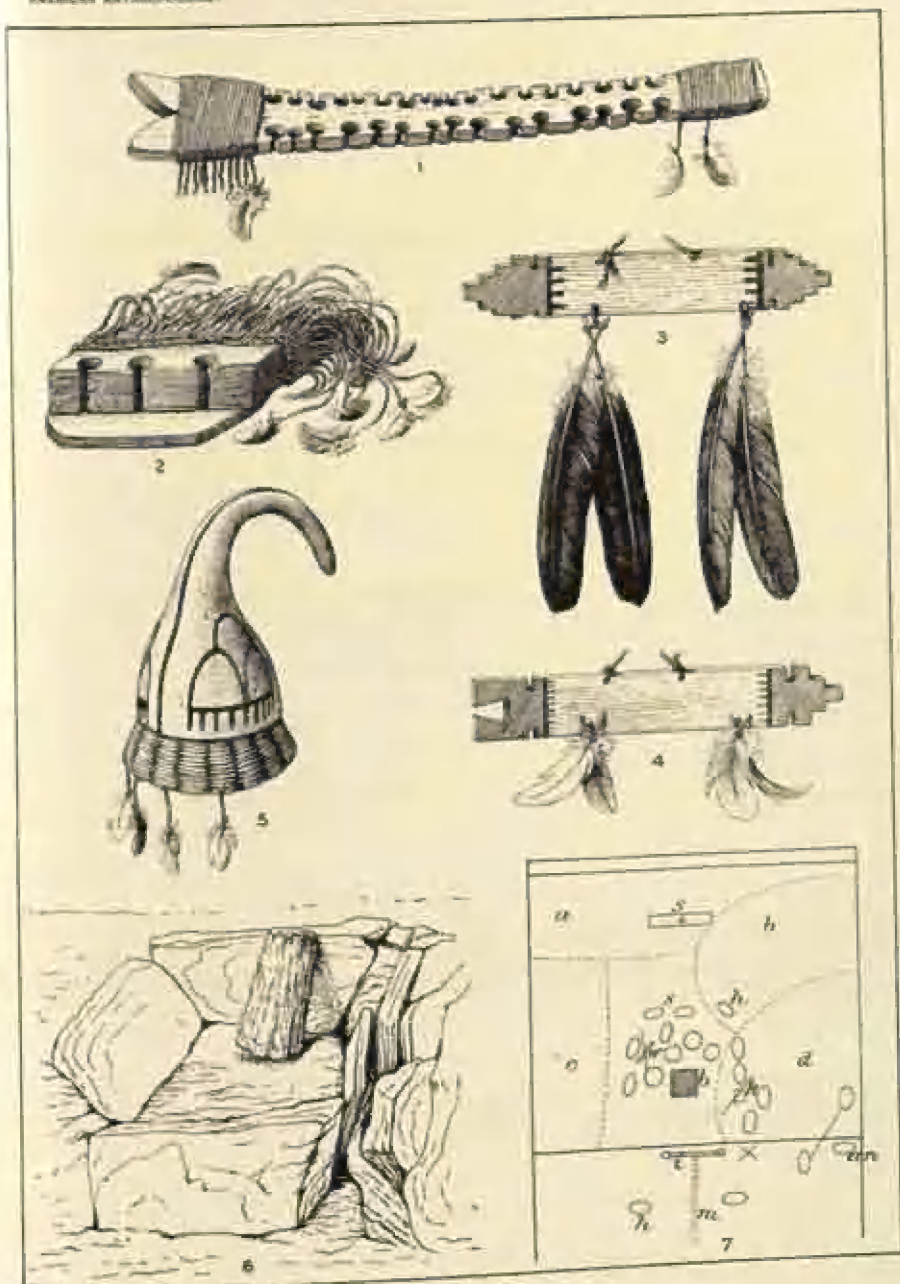
Each *Aaltá* had a white spot on each cheek, and their chief, Kotka, wore the helmet with the artificial mountain-sheep horns of *Alosaka*. He stood at the bottom of the ladder and with an elk-horn directed the incoming men where to seat themselves.

The *Wáwútcimá*, led by their chief, Suñoiwiwa, followed the

Aaltá. Their leader carried a rod to which hawk-feathers were attached, and their advent, like that of the societies which preceded them, was announced by balls of meal thrown into the kiva through the entrance. They passed southwest of the ladder, and grouped themselves in the positions indicated in the accompanying plan (plate IV, 7), but two of their number seated themselves by the fireplace between the *Tataukyamá* and *Aaltá* chiefs.

All those who were to participate, numbering possibly a hundred, were now present in the kiva, and all stood in their respective quarters of the room, the *Kwakwantá* (*d*) in the northeastern corner, the *Tataukyamá* (*b*) in the northwestern, the *Aaltá* (*a*) in the southwestern, and the *Wúwútcimá* (*c*) in the southeastern, all on the western or ceremonial part of the floor. Hayí remained on the northern side of the line of meal from the ladder across the spectators' part of the kiva, and the man representing *Alosaka* (*h*) at the foot of the ladder on the southern side. Anawita (*an*), shielded by the black blanket held by two men, was seated on the upraise; Hani, Suñóitiwa, and Suyoko stood in a row, the first-mentioned at the left of the line, or at the northern end, facing the fireplace (*b*). The *Kwakwantá* fire-stone (*k*) was north of the fireplace, and two *Kwakwantá* priests knelt by it, one holding each end firmly and pressing it to the floor. This fire-stone was set on a bed of shredded cedar-bark upon which six radiating lines, representing the cardinal points, had been drawn with pollen. During the fire-making, Tcali and a companion twirled the *Kwakwantá* fire-stick, relieving each other at intervals during the rites.

The *Aaltá* fire-board (*w*) was placed south of the fireplace, and was held in position by two kneeling men, one of whom was Tuwasmi. Pautiwa and a companion manipulated the fire-drill of this society. It was laid on shredded cedar-bark on which six radiating lines had been drawn. The four baskets containing meal and the stringed pine-needles of the different societies were arranged in a semicircle between the chiefs and the fireplace in the following order: *Kwakwantá*, *Tataukyamá*, *Wúwútcimá*, and



CEREMONIAL OBJECTS, ETC.

1, *Aalta* fire-board; 2, *Kwakwaka* fire-stone slab; 3, 4, *Aalta* *moshok*; 5, *Kwakwaka* helmet (*Akanaka*); 6, Shrine of *Tunapshutmai*; 7, Diagram showing positions of societies in the *Moksha* (*Akanaka*). when the new fire is ignited: a, *Aalta*; b, *Talakwaka*; c, *N'awakwaka*; d, *Kwakwaka*; e, *Awakwaka*; f, *Aalta* fire-board; g, *Kwakwaka* fire-stone; h, Line of meal from ladder (i); i, *Akanaka*.

Aaltá, the basket of the last society at the northern end of the semicircle. As soon as all the priests had entered the kiva the fire-makers fitted their fire-drills into the depression of the fire-stone or fire-board, and all the other priests arose while Hani recited a short prayer. Each chief held the badge of his office, and for a few minutes there was silence, which was broken by Hani, who gave the signal to begin, and the members of the *Tataukyamá* and *Wúwiltcimá* began to sing. The *Kwakwantá* accompanied this song with the clanging of their bells, and the *Aaltá* with the rattling of tortoise-shells and deer-hoofs. The two societies appeared to sing different songs, although in unison, and those of the *Tataukyamá* resembled those of the Snake priests at the snake washing.

Almost simultaneously with the beginning of the song the fire-makers began to rotate their drills, corn pollen having been dropped into the slots of the fire-board and fire-stone before the spindles were inserted. The spindle was held vertically between the palms, and in rotating it the top was pressed downward. A second fire-maker relieved the first at intervals, and smoke was produced by the *Aaltá* society in twenty seconds, followed by a spark of fire in about a minute. The *Kwakwantá* produced smoke with their fire-stone in one minute and twenty seconds, and a spark in a minute and fifty seconds. The operation of twirling the fire-drill was the same in both societies,—a man in the middle held the board firmly in place, and the two fire-makers relieved each other every fifteen seconds in rotating the drill. Soon there was a smudge in the cedar-bark which was blown into a flame with the breath, the fire-makers standing as they did so that all might see the new fire. The songs continued and the burning cedar-bark was placed in the fireplace where it ignited the pile of greasewood which had previously been placed there in readiness by Hani. As this wood blazed to the ceiling, the songs ceased. When the fire had burned down to a moderate flame, Hani for the *Tataukyamá* and Euwa for the *Kwakwantá*

societies took the basket trays of their respective societies in their hands, stood before the fire, and prayed, holding the pine-needle offerings over the flame before them. After these prayers each chief dropped six stringed pine-needles into the flame, one for each cardinal direction. Tuwasmí then prayed on behalf of his society, dropping his pine-needle (*nakwakwoi*) into the fire. He was followed by Kotka for the same society, and by Suñoitiwa for the *Wüwütcimtä*. Last of all Anawita, still concealed behind the blanket screen, prayed, to which all vigorously responded with "*Antai*."

After the chiefs had dropped their offerings into the sacred flame, they again prayed. Twenty-four offerings were made to the fire, six¹ from each of the four societies. The acts of the chiefs in making these offerings were much the same in every case—the pine-needles were brought to the lips and then dropped into the flame with a pass in the direction of the cardinal point for which the sacrifice was intended. There was almost perfect silence as this took place, and after the chiefs had made their sacrifices individual members of the four societies also prayed, and to these prayers Anawita, from behind the screen, replied to all collectively. The prayers were directed to Masauüh, and material blessings were requested.²

Shortly after this two of the societies, led by *Alosaka*, left the kiva in the following order: Hani, taking up his tray of meal and certain prayer-offerings, followed by the *Tataukyamá*, went up the ladder, followed by Suñoitiwa leading the *Wüwütcimtä*. The *Aaltá* also left the room, but the *Kwakwantá* remained for some time and did not join the first two societies, which proceeded down the western trail to Old Walpi, as will presently be described.

The line of meal across the upraise of the kiva floor east of

¹ Corresponding to the cardinal points, the places of sunrise and sunset at the summer and winter solstices.

² It was said that on each celebration of the New-fire rites Anawita ties a stringed feather to his fire-stone.

the ladder was obliterated by *Alosaka*, and Hayi then went about the kiva brushing the floor where the men had stood, and sprinkling the walls with medicine liquid—a lustral ceremony to offset evil influences. The blanket before Anawita was dropped, and he stepped to the fireplace, said a few words, and then went to the *Tcivato-kiva*, followed by his society. The members of the *Tataukyamû* and *Wawûtcimû* societies filed off through the western court of the pueblo, and went down the trail to the site of the old pueblo of Walpi and the shrine of *Tuwapohtumsi* (plate IV, 6).¹

As soon as the prayers and sacrifices to the new fire had been made, one of the *Aaltû*, who wore two minute antelope or deer horns on his head, ignited a cedar-bark torch and passed with it up the ladder. He went first to the *Wikwaliobi-kiva*, where he ignited a pile of fuel left in the fireplace for that purpose. He then passed on to the *Al-kiva* and the *Tcivato-kiva*, where he did the same, but was careful in each instance to see that the wood was thoroughly ignited before he left the room. Thus the sacred flame was kindled in all the kivas used in this ceremony. The fire thus kindled in these different rooms was regarded with the same reverence as that ignited with the rotating fire-drills, and was not allowed to become extinguished during the remaining days of the ceremony.²

4. Visit to the Shrine of *Tuwapohtumsi* and Old Walpi

When the societies left the *Moñ-kiva*, directly after the new fire had been made, the procession was formed in this order:

¹ A stone enclosure in which is a log of fossil wood. The site of Old Walpi is on the terrace north of the end of the mesa on which the present pueblo stands. Little can now be seen there except mounds and piles of debris, with here and there the tops of the walls of former houses. The Hano (Tewa) name of *Muiyauwû-miyû*, the Goddess of Germs, is *Naholwûa*, Earth-altar-woman, an exact translation of *Tuwapohtumsi*. I believe all these names refer to the same personages.

² There is no evidence that a perpetual fire is maintained in Hopi kivas or in any place in Walpi, nor is there any association of the new fire with the name Montezuma as is popularly believed.

An *Alosaka*, Hani followed by the *Tataukyama*, *Susioitiwa* followed by the *Witwátcimti*, an *Alosaka*. All members were naked, which must have been very trying in the cold air after the superheated kiva exercises. The procession moved to the shrine of *Tuwapontumsi*, where rites were performed which the writer did not witness. This shrine (plate IV, 6) is among the rocks at the south-western point of the mesa in the foot-hills west of Simo's new house. It is made of flat stones set on edge, open above and on one side. The fetish which it contains is a log of fossil wood 30 c. long by 10 c. in diameter.

After having made their offerings at this shrine the procession moved along the trail leading to the site of Old Walpi, called *Kütcaptuvela*, on the terrace north of and below the present pueblo. *Alosaka* led the procession in four circuits around a definite space about 150 by 75 feet. This entire area was said to be one great *sipapá*¹ where the wise old men live. Patting his foot on the ground, one of the men in the procession said, pointing downward, "Here, just below here, the old people dwell. We are now," he continued, "praying to them for material prosperity—rain, health, abundant harvests." The *nakwakwoci* deposited here are offered to the early Hopi ancestors who once dwelt there, and who are now believed to be *katsinas* in the lower world. Led by *Alosaka*, the procession encircled the *sipapuni* four times, now and then stopping to deposit prayer-sticks or to drop pinches of prayer-meal in depressions in the rock or elsewhere as directed by *Alosaka*. After these four circuits of the supposed abode of the ancients, the procession passed along the trail leading to the high bluff forming the western point of the mesa, where it halted. Up to this time all had been silent, or spoke only in whispers; but on halting some one said, "*Ta-ai*" ("Come on, begin"), and one of their number uttered some witticism which the writer did not

¹ The orifice through which man came to the surface of the earth from the under world is called *Sipapá*. This is symbolized by a small hole in the floor of the kiva, and the name is often applied to shrines.

understand. All yelled with laughter, and the rocks echoed with their shouts. This was repeated several times, after which the march was again taken up, and in silence they proceeded up the trail to Walpi, through the passage west of the *Moñ-kiva* to their respective kivas. There was half an hour of social conversation in their rooms, after they returned, and soon they rolled themselves in their blankets to sleep. As it was said that there were to be no further ceremonies that night, the author retired about midnight to his room in Sitcomovi for needed sleep.

It is at this stage of the New-fire ceremony that the statuette of *Talatumsi* is brought into the pueblo from her shrine below the mesa and deposited on the hatchway of the *Moñ-kiva*. This does not take place in the yearly celebration, but only in the quadrennial *Naacnaiya*. This image is brought into the pueblo by Kakapti, an *Aaltó* priest, directly after the new fire is made, and is returned to her shrine on the morning of the fifth day. As the rites when this image is returned to her shrine appear to be the most complicated yet observed in connection with the image, I quote the following description of them from a previous work:

"An hour before sunrise the *Tataukyamú* and *Wíwúltcimtá* marched to the *Trivato-kiva* and stood on the roofs (*Trivato-kiva* and *Al-kiva*) wrapped in their blankets. Their chiefs and those of the Horn society were clustered around the *Talatumsi*, holding meal trays in their hands. All sprinkled the figurine, and the two societies began their fine solemn hymns. The two Horn sentries (*Alosaka*) stood in front of the *Tataukyamú-kéles* (novices) at the west end of the *Kwón-kiva* (*Trivato-kiva*). . . . On the first glimpse of the sun the song ceased and Kakapti took in his hands the *Talatumsi* figurine. The *Tataukyamú* then filed off toward their own kiva (*Moñ-kiva*), and the *Wíwúltcimtá* followed them. Nearly all the Horns (*Aaltó*), wearing helmets (horned) and buckskin mantles, and some fifteen or twenty *Kwakwantú* with their helmets, but in ordinary clothing, followed. Kakapti went in front of the Horns (*Aaltó*) bearing the figurine of *Talatumsi*.

"As the *Tataukyamú* reached the stairway trail (*Howina*) they filed past it, all the rest (except *Aaltó*) following to the broad terrace, a little west of the group of homes at that end of the mesa. There the

Kwakwantá, the *Tataukyamá*, and the *Wúwútcimá* clustered in three separate groups or irregular lines about one hundred yards apart. The latter two societies on halting began their songs. The Horns (*Aaltá*) scattered among the cliffs between the terrace and the summit, and bounded constantly back and forth among the crags, faithfully imitating mountain sheep. The songs continued fifteen minutes, during which time Kakapti placed the figurine back in its concealed niche from which he took it on the first day."

From this account, written in 1892, there seems no doubt that the *Talatumsi*¹ figurine is in the special keeping of the *Aaltá* and is directly associated with the *Alosaka* cult.

NOVEMBER 14—SOCKAHIMÚ, ALL REST

Dance of the Wúwútcimá

At intervals during this day, and on the two days following, there were public dances of the *Wúwútcimá* society which began early in the morning and lasted until dark. About an hour after sunrise twenty men of this society, accompanied by a drummer, passed singing through the pueblo. They formed two platoons facing each other, linking hands, with fingers imbricated. Their faces were whitened and they bore zigzag finger-marks drawn down their cheeks, reminding one of the symbolic designs on the masks of *Hehea-katcinas*. All were quite naked, smeared with a band of yellow pigment around the calf and thigh, with a girdle and cross painted on the body, and parallel bands on chest and arms. They directed their songs and obscene remarks to the women belonging to the *Mamzrautá* society in lusty tones, mingled with taunts and songs — "*Hai-ya-a-hai-ya-a*," etc. This singling out of certain women is in conformance with legends, as elsewhere explained in this paper; and it is instructive to note that the same women return the compliment for this and the following day's proceedings in their October rites called *Mamzrauti*.

¹ The Hano (Tewa) name of *Talatumsi* is *Cenibwa*, Horn-woman.

On the sixth and eighth days of the festival the women retort in this way to the taunts of the *Tataukyamá*. On the former day twenty-five women and girls participated, and all rubbed their breasts, arms, and legs with mud before leaving the kiva. Several of them were decorated with zigzag facial marks representing the *Hehe-katsina*; they wore a sheepskin over their shoulders, and in their dance imitated the movements of the personage¹ mentioned.

Nocturnal Patrols of the Novices

From time to time during the nights of several days there were patrols through the pueblo of costumed men carrying cowbells, the meaning of which was discovered by studies in the *Tcivato-kiva*. These patrols were connected with the initiations of novices of the *Kwakwantú* society, and were specially prominent on the evening of the first day. The departure and return of these novices were watched, and one of the parties was followed through the pueblo.

Four lads of about sixteen years of age were initiated into the *Kwakwantú* society, and these were run through the town by an older priest in much the same way as in college society initiations. They were led from place to place at breakneck speed, along difficult trails, in the frosty air. About midnight Kanu, a priest appointed to conduct them, approached the western end of the kiva, and taking from the wall one of the horned helmets (plate IV, 5) hanging in the kiva, put it on his head. He wrapped a skin about his body and took the large elk-horns in one hand and a huge agave stick or club in the other. The *Kwakwantú* have many copper cowbells which they carry in their patrols, and Kanu took one of these from the raised seat at the western end of the kiva. The four novices (*keles*), each one of whom carried an ear of maize, also placed helmets on their heads and took bells

¹ In a collection of dolls gathered by the author in 1892 there is a compound one consisting of two *Palshiké-munar* surmounted by a figure of *Hehe*. There is some connection between these personages, one aspect of which is brought out in the New-fire rites.

in their hands. The company, led by Kanu, started up the kiva ladder, and the clanking of the bells could be heard through the pueblo as they made their patrols. They made their way to several shrines on the East Mesa, running from one to another, and returning in about half an hour. Similar patrols, under leadership of other members of the society, were made during the night, and the explanation of these patrols was said to be simply the initiation of novices.

NOVEMBER 15—KOMOKTOTOKYA, WOOD-GATHERING

Dance of the Wüwüteimtä

About half an hour after sunrise the members of the *Wüwüteimtä* society emerged from their kiva and sang their song, called the *Me-ha-lo-lol*, through the pueblo. There were a few more participants on this than on the day preceding, and this increase of number continued each day. The singers were escorted from their kiva by two naked Horn priests (*Aaltä*), who wore mountain-sheep helmets and were called *Alosakas*. They carried ears of corn in their right and deer antlers in their left hands.

The dancers formed two platoons facing each other, the members linking arms and clasping hands with imbricated fingers. The senior chief, Suñoitiwa, stood at the right or western end of the northern platoon; he carried in one hand a rod with an attached bunch of hawk tail-feathers, a badge of his chieftaincy. Their song was lively and effective, and a drummer walked between the two lines, accompanying them with taps on an ancient drum. They began a sidelong dance, moving in rhythm with their song, shuffling along a few paces eastward, and then back to their former position. With this strange movement they made their way in front of the houses to the end of the pueblo, after which they countermarched, and returned in the same way to their kiva. From time to time their songs broke out into shouts and gibes at the women spectators on the roofs of the houses, calling out to them to pour water on their heads. A few of the

women descended the ladders and poured ice-cold liquid over the shoulders of the dancers, which made them shiver, for they were naked and the air was biting cold.

The costuming of the *Wüwiltcimti* in their dance on this day was as follows: Hair hanging loosely over the shoulders, but with no feathers on the head; a streak of yellow ocher was daubed on each cheek, and they had bands of the same color, about the width of the palm of the hand, across the upper part of the chest, and four streaks made with their fingers parallel along the ribs; similar streaks of a finger's breadth were drawn across the upper arm, and a band, the width of the palm, decorated their forearms. There were similar broad bands around the mid thigh and the calf of the leg.

On *Komoktotokya* night the author visited all the kivas, but found no exercises transpiring in them up to midnight. He was told there would be no rites in them that night, but that after the Pleiades or Orion reached the meridian all would sleep the rest of the night; he is unable to record whether or not this program was carried out, but as no altars were erected, no complicated rites are probable.

Pautiwa came into the *Moñ-kiva* about 9 P.M., and sat by the fireplace smoking in silence for a long time. He wore on his head the same two small antelope-horns which the fire-bearer wore on the evening of *Assembly* day, when the sacred fire was ignited; and when he left the kiva there was a loud shout by those who had assembled. His visit had a ceremonial import, but for what purpose the writer was unable to discover.

NOVEMBER 16—TOTOKYA OR FEAST

The day called *Totokya* is one of the most important in all Hopi ceremonies, and, as a rule, is marked by the public exhibitions, whereas the previous days are devoted to secret rites in the kivas. The ceremonies performed on *Totokya* in the New-fire festival may be classed as follows: 1, Purification of all the

kivas; 2, The altar in the *Al-kiva*; 3, Ceremonies about a medicine-bowl in the *Tcivato-kiva*; 4, Public dances of the *Wüwütcimtä* society; 5, Public dance of the *Tataukyamá* society; 6, Episode of the meal beggars; 7, Feast in all the kivas; 8, Night songs in all the kivas.

1. Purification of all the Kivas

Early in the morning a man with his face whitened, carrying a small deer-horn and an ear of corn, and wearing diminutive antelope-horns on his head, visited all the kivas in turn, beginning with the *Moñ-kiva*, and carefully swept the floors, carrying the sweepings outside and casting them over the mesa side.

About 9:30 A.M. the *Aaltá* chiefs placed on the straw matting of their kiva hatchway, for the first time, a small basket helmet with two horns made of painted gourds,¹ and at the same hour Anawita and Tcali began the preparation of the *Kwakwantá* prayer-offerings.

2. The Altar in the *Al-kiva*

The *Aaltá* altar (plate V) was made in the *Al-kiva* at noon on the last day by the two chiefs, Kotka and Tuwasmi. It was of simple construction, consisting mainly of the *tiponis* of the chiefs, and four prayer-sticks which had been made earlier in the day.

A layer of valley sand was sprinkled on the kiva floor in the western end of the room, and at intervals on its western border this sand had been heaped up into four mounds at equal distances. A single prayer-stick was set in the apex of each of these mounds, and sticks with attached feathers, one for each member of the *Aaltá*, were also inserted in the top. The *tiponis* of the two chiefs were placed on the two middle mounds — Tuwasmi's *tiponi* on the right, Kotka's on the left. A string with attached feathers was stretched from the base of the latter diagonally across the

¹ This diminutive helmet was identical with those worn by novices.



Drawn by Mary M. Leighton

ALTAR OF THE ALOSAKA

floor toward the ladder. Between the mounds of sand were piled ears of corn, of many colors, tied in bundles with yucca fiber. The floor in front of the *típonis* was covered by symbolic figures representing rain-clouds drawn with meal. There were three of these symbols, a rectangular one in the middle and a triangular one on each side. In the elaborate New-fire ceremony (*Naac-naiya*) this simple altar gives place to one more complicated, having an upright framework with symbolic figures which have not been accurately noted.

3. Ceremonies about a Medicine-bowl in the *Tivato-kiva*

The songs and accompanying rites about the medicine-bowl in the *Tivato-kiva*, on Assembly day, have already been described. They were repeated with greater elaboration on the last ceremonial day.

All of the members of the *Kwakwantá* society were present, and there were several additions to the paraphernalia of the previous celebration. The wooden plug which ordinarily closed the small hole in the floor called the *sipapá* had been removed, and a line of meal had been drawn across the floor from it to the left pole of the ladder. A second line of meal was also drawn across the floor from the medicine-bowl to the right pole of the ladder, and the bowl itself, with ears of corn, birdskins, and medicine-stones, were arranged as described in the account of this altar on the first day. On the floor of the room at the western end there were three basket-trays with meal- and prayer-offerings, and the whole western wall of the kiva was covered with helmets with curved horns, and agave stalks of many sizes, all painted white. These had been installed by Anawita in such manner as to be termed an altar (*poñya*).

All the assembled *Kwakwantá*, not excepting the chiefs about the medicine-bowl, wore their ordinary clothing, but soon after noon one of the society undressed and was painted with the

prescribed pigments. He wore no helmet, but on his back he carried a framework covered with skin, called a moisture tablet. He put on a ceremonial kilt, and decorated his body and legs with yellow and green pigments. He made two parallel marks of these colors on each breast and shoulder-blade, and rings of yellow and green on his knees, elbows, and over his heart. This man was later a courier who was sent to *Tawapa*, or Sun spring, to bring a small netted gourd full of sacred water for the charm liquid of the medicine-bowl. A second *Kwakwantâ* priest, wearing a helmet bearing large elk-horns, and clothed in a skin, accompanied the courier to the head of the stairway trail west of the pueblo. The escort left the courier at the head of the trail and returned to the *Tcivato-kiva*, but the courier hastened to the spring, returning on a run up the trail, so that in about twenty minutes he had brought the water from Sun spring to the *Kwakwantâ* chief. The song and the exercises about the medicine-bowl then began and were found to be practically identical with those of Assembly day. Before the songs commenced one of the chiefs ascended the ladder, and, holding a quartz crystal in the sunlight, deflected a ray into the medicine-bowl at the western end of the kiva.

The fifth song in sequence was accompanied by the ringing of cowbells, of which the society have many and wish still more; and at the close of the sixth song fragments of a root were passed around, each priest nibbling a little, which he afterward threw into the fireplace.

Just as the songs ceased the *Tatankyamâ* were heard outside the kiva singing their ribald songs, and, as the author stood on the kiva hatchway watching them pass, Pûtche emerged from the room and sprinkled charm liquid upon them by dipping a feather in a medicine-bowl, which he held in his left hand, and throwing the liquid upon the dancers. He then asperged to the four cardinal points and returned to the chamber below where the *Kwakwantâ* were assembled.

4. *Public Dances of the Wúwútcimta Society*

The *Wúwútcimta* society appeared in public at intervals throughout the day, emerging from the *Wikwáliobi-kiva* and forming two platoons facing each other, with a drummer between them. They were escorted by *Aaltá* priests, or *Alosakas*, two or four in number, one at each end of the platoons. The men of the *Wúwútcimta* society clasped hands and moved with a sidelong motion, singing a song called *Me-ka-lo-lol*. Each man had his legs painted yellow, with a band of the same color above the knees. The arms, from hands to elbows, were likewise covered with yellow pigment, and there were parallel bars of the same on the chest, back, and arms.

Suhoitiwa led the two platoons, bearing a stick with attached hawk-feathers, and Katci stood between the two lines beating a drum. Each *Wúwútcimta* wore on his forehead a flower made of pasteboard, and carried an ear of corn in one hand; all wore variegated feathers in the hair. Their dress and bodily decoration vary somewhat, but on the day called *Totokya*, when the costuming was particularly striking, it was as follows: The participants wore variegated paroquet feathers attached to the crown of their heads and their hair hung loosely over their backs; the left shoulder was painted yellow, the right, blue; a double blue and yellow line extended from each shoulder to the waist in front and on the back; the right arm had two blue lines or bands drawn along the outside over the shoulder to the elbow, and the arm from the elbow to the wrist was painted yellow, with the same colors reversed on the left arm. The right leg from a hand's breadth above the knee over that joint was colored yellow; from below the knee over the foot, blue; and a blue band the width of the thumb girt the leg above the knee. The same markings were painted on the left leg with reversed colors. Each man had a white ceremonial kilt girt with a belt, and wore a foxskin dangling from the kilt behind, with a second belt over the first. He wore a little

disk or artificial flower on his head, and carried an ear of corn in one hand. The society was escorted by members of the *Aaltá* society wearing imitation mountain-sheep helmets and bearing an ear of corn in one hand, a painted stick (plate IV, 3) in the other. This society repeated its public dances several times during the day, in the same way as in preceding presentations except that their costume and adornment were more elaborate in the closing performance than on earlier days.

5. *Public Dance of the Tataukyamá Society*

About 2 P.M., or just at the close of the rites about the medicine-bowl in the *Trivato-kiva*, the *Tataukyamá* emerged from the *Moñ-kiva* headed by their chief, Hani (plate III). They wore only breechclouts, necklaces of rabbit-tails stained red, and ear pendants of the same objects. Their bodies were painted yellow, and their hair was tied with cornhusks in a bunch over the forehead: their faces were likewise yellow. Red bands were drawn from the eyes to the ears, and from the corners of the mouth across the cheeks. Large figures of the generative organs were painted on their chests, backs, legs, and arms, and in their hands they carried realistic representations of the human vulva made of watermelon rinds attached to the ends of short sticks.

These *Tataukyamá* were accompanied by a drummer, and were escorted by an *Aaltá* or *Alosaka* priest who wore diminutive horns on his head. The *Tataukyamá* marched in a group from place to place, holding up the imitation vulvæ (*luwa*) to the women at different houses, singing obscene songs, and making lascivious gestures and remarks. Their faces bore the expression of, and the movements of their bodies were in keeping with, their songs and remarks, while certain women replied to them in kind. Others threw foul water or urine upon the singers, which made the naked men shiver in the cold air. Their jeers were directed mainly to the women of the *Mamsrautá*, which the *Tataukyamá*



Sketch by M. Wright Gill

THE ALOSAKA MEAL BEGGARS (NUMANSISPALA)

call a sister society. Naturally very few women gathered on the housetops to listen to these remarks of the dancers.

The *Tataukyamû* first danced and sang in the court of the *Moñ-kiva* and then made their way to the houses near the "Snake rock." From there they continued past the *Al-kiva* and *Tivato-kiva*, and then dividing into small squads visited the row of houses on the northern side of Walpi. Wherever they went they sang the same songs, calling out to the women, challenging them to come down,¹ and holding up the phallic emblems which they carried in their hands. The *Aaltû* priests acted as escorts in all these public dances, accompanying both the *Wawutcimû* and the *Tataukyamû* in their rounds of the pueblo.

6. Episode of the Meal Beggars

At the close of the public dances a pair of men from each of the *Kwakwantû*, *Aaltû*, and *Tataukyamû* societies, made a circuit of the pueblo begging for meal. Each pair wore the garb of their respective societies, were characteristically painted, and carried basket-trays. They went from house to house, silently halting at the ladders and holding up the baskets to the occupants, waiting until a woman came out and dropped a handful of meal into the receptacles, after which they continued their quest. The circuit made by these men, in their begging tour for meal, led them from their kivas eastward along the main court, then back along the less-frequented street on the northern side of the pueblo to the kivas whence they started.

The *Aaltû* beggars (plate VI) wore helmets with two *Alosaka* horns, and white buckskins, leggings, and moccasins. Their hair was loose, and the whitened artificial mountain-sheep horns were decorated with raw cotton. The bodies of the *Tataukyamû* beggars were naked, but were painted yellow, with red bands across the face from eyes to ears and from mouth to neck. One

¹ One old woman lifted her blanket and made remarks that need not be repeated.

of the beggars carried in his left hand a short stick with attached hawk-feathers, similar to the kiva standard.

The two *Kwakwantú* beggars (plate VII) were more elaborately dressed and decorated than the others. Each wore bunches of variegated feathers in his hair, and under one eye was painted a crescent in white—a characteristic marking of this priesthood. It would seem that the *Kwakwantú* very rarely wear their helmets in public or outside the kiva in the daytime. Their chests were daubed with yellow and green pigments, and there were small yellow and green rings on the middle line of the body. Similar rings appeared on the knees and calves, the former being painted green, the latter yellow, while bands of the same colors encircled the legs above the knees. The men wore white embroidered kilts tied with sashes, to which bells were fastened, and both had anklets of variegated patterns.

The distinctive object worn by these men was a rectangular framework over which was stretched a painted skin; it was bordered with plaited cornhusks to which red horsehair was attached; a bunch of variegated feathers was fastened to the upper margin, and these objects were worn on the backs of the priests. The figure painted on this skin consisted of two rectangles, one green, the other yellow, separated by a median band parallel with the longer sides. One of the men carried a short agave stalk, to the extremity of which cornhusks were fastened. In the basket in which they received the meal given by the women a prayer-stick was seen. The prayer-meal obtained by the beggars was later used in making broad trails from the kivas to the shrines in which sacred offerings were deposited.

PALAHIKTIVE

On the afternoon of the *Totokya* celebration of the New-fire in 1892 there occurred an episode of the *Tataukyamá* dance which was not witnessed in 1898. This was called the *Palahiktive*, and was the personation of the *Palahiko-mana* or Corn-maid of the



Drawn by M. Wright Gill
THE KWAKWANTŪ MEAL BEGGARS (NUMANISPAŁA)

Mamsrantá, who wears the rain-cloud symbols in the form of a tablet on the head. About 3 P.M. fifteen *Tataukyamá* emerged from their kiva and danced through the pueblo, singing joyfully. Their hair was tied up in cornhusks, and their faces were smeared with bands of red pigment. Their bodies, covered with yellow ocher, were naked, and they wore ear-pendants and necklaces of red-stained rabbit-tails.¹ Several of their number were disguised as women, or wore women's blankets. These bore on their heads radiating wooden slats symbolic of feathers. One of their number wore on his head a terraced tablet, symbolic of rain-clouds, and personated *Palahiko-mana*. The five disguised men danced to a spirited song of the *Tataukyamá* for about twenty minutes, and then returned to the *Moñ-kiva*. They were accompanied by two Horn men, or *Aaltá*, as escorts.

While this was taking place the *Wáwútcimná* society, accompanied by a drummer and four *Aaltá*, appeared and performed their eccentric dances through the pueblo. The personation of the *Palahiko-mana* is simply a complemental performance to that of the women of the *Mamsrantá*, who, in their celebration in October, represent the dances of the *Tataukyamá* and *Wáwútcimná*, and personate the same Corn-maid.

ALTAR IN THE TCIWATO-KIVA

The installation of objects, as helmets, agave stalks, and elk-horns, hanging on the western wall of the kiva, is regarded as an altar, especially when the *tiponi* of the society is formally placed on its mound of sand on the floor. Counting this as one, there are two true altars in the New-fire ceremony—one, that of the *Aaltá* society in the *Al-kiva*, and the other the objects above mentioned in the *Tciwato-kiva*. The chiefs of the remaining societies, while they have a medicine-bowl placed on the floor in

¹ This is totemic. The *Tato* or Rabbit clan lived with the *Pibe* people from whom this priesthood sprang.

a prescribed way, have no true altar in either the elaborate or the abbreviated New-fire rites.

From the fact that the altar of the *Kwakwanta* consists of the objects worn or carried by them, a description of these objects separately gives the best account of their altar, and naturally falls in another place.¹

7. Feast in all the Kivas

If the reader will consult the list of men who take part in the New-fire ceremony he will find in it the names of almost all the adult males of East Mesa. There was a feast in all the four kivas late in the afternoon of *Totokya*, and never has the writer seen a greater quantity of food brought to the kivas than on this occasion. Every woman in each of the three pueblos contributed something, and the amount of food thus brought together was enormous. A man stood at the kiva hatch, and as the trays of *piki*, or paper-bread, bowls of stew, and other delicacies were brought by the women, he called down to those below the name of the man to whom it belonged, and it was arranged along the middle of the room. I noticed no ceremonial pudding (*pigumi*) in this collection of food, but almost every other dish known to the Hopi was well represented. This was a most auspicious occasion to study the costumes of the women and girls, nearly every one of whom went to one or another Walpi kiva at this time. The feast began just before dusk and lasted until sunset or later.

8. Night Songs in the Kivas

The night of the day under discussion was almost wholly passed by the different societies, in their respective kivas, in singing their songs about their *tiponis*, all of which were set in position on the floor.² The nature of these rites in the different

¹ See account of helmets, *moikakus*, and other ceremonial paraphernalia.

² The time for important night ceremonies in the *Tivuto-kiva*, and possibly in the others, is determined by the position of the Pleiades and Orion (*Htotumka*) which were closely watched by the natives at this time.

sacred rooms is considered in the following pages, but the account is more or less fragmentary because I was not able to see the ceremonies which were performed simultaneously in different places.

TOTOKYA NIGHT IN THE MOŌ-KIVA

Late in the afternoon of *Totokya*, Hani placed his *tiponi* in position just back of the *sipapā*, setting a prayer-stick just before it, and on either side ears of corn were arranged regularly on the floor. At 9:30 P.M. all the *Tataukyanā* withdrew to the spectators' part of the kiva, except the chief (Hani) and three others, who sat in the northwestern corner.

Shortly after the *Wūwūtcimā* society, headed by their chief, Suñoitiwa, and accompanied by a drummer, came in and arranged themselves in double crescentic lines facing the fireplace, with the chief on the right of the inner row. These visitors presented a song called *Me-ha-lo-lol*, accompanied by a stamping step and rhythmic motions of the body, for about ten minutes, when Suñoitiwa passed a stick with attached hawk-feathers¹ to the man at his left, saying, "*Ūm yū kan yūn i ni*." This man, on receiving it, danced with the others once around the fireplace in a dextral² circuit, until he reached the end of the line, where he stood, then returned to the first position, when he passed the stick to the man at his left, and after saying, "*Akownatni*" ("Good bye"), went up the ladder, as Suñoitiwa had done before him. This was repeated and continued until all but six of their number had left the kiva. Then the song ceased; the men of the *Wūwūtcimā* who remained greeted those in the kiva in the same way, and went up the ladder, passing on to their own kiva.

At 12:20 oclock the *Wūwūtcimā* came to the *Moŏ-kiva* again, and repeated the dextral circular dance just described.

¹ A *heltukwa*. This object is a badge of office which is used in the kiva rites and carried by the chiefs in their public dances. In this society it is identical with the *matci*.

² The sinistral circuit is all but universal among the Hopi.

Their bodies were naked, save for a breechclout, but they wore many beads about their necks, and artificial rosettes representing flowers on their foreheads.

On a visit made to the *Moñ-kiva* at 2:20 A.M., the *Tatau-kyamú* were heard chanting their songs, which ceased about four oclock on the next morning. These chants were remarkably solemn, with stirring measures, and altogether were very impressive. During the singing Hani sat behind his *típoni* with his back against the kiva wall; and two *Aaltá*, wearing their horned helmets on their heads and carrying deer-antlers in their hands, stood at the ladder beating time to the songs with a movement of one leg to which a tortoise-shell was attached. They were naked save for the scanty covering of a breechcloth.

At the close of the songs an *Alosaka* brought down into the kiva two vessels of water which had been standing in the frosty air on the kiva hatch, and poured a little of it on the head of every singer. The cold water caused the singers to wince, and made a nasty wet muck on the floor.

TOTOKYA NIGHT IN THE WIKWALIÖBI-KIVA

No special ceremonies were noted in the *Wikwaliöbi-kiva* during *Totokya* night, for the frequent visits of the society to the *Moñ-kiva* left little time for rites in their own chamber. No altar was seen, and during the intervals between their exhibitions in the neighboring room most of the men were dozing on the floor wrapped in their blankets.

TOTOKYA NIGHT IN THE AL-KIVA

At one oclock in the morning the *Aaltá* society were singing in their kiva around the medicine-bowl before the *poñya* or altar already described. Their medicine-bowl was placed on a low pile of sand, on which had been drawn six radiating lines representing the six cardinal directions. Kotka sat on the right, Tuwasmí on the left of this bowl, and there was a line of priests

on each side. Other rows of members sat with backs to the northern and southern walls of the kiva. The *tañalanka*, or pipe-passer, sat near the pipes on the floor west of the fireplace, and the fire-keeper (*kūhitaka*) under the left ladder pole. A tyler, wrapped in a blanket, kept watch in the frosty air, on the kiva hatch, beating time with a bunch of hoops to the songs in the chamber below. Each man in the line from the medicine-bowl to the fireplace had a small rattle.

The nature of the rites in the *Alkiva* was not determined, although visits were made from time to time to the room, and it was found that the singing was in progress throughout the night; but as simultaneous performances in the other kivas appeared to be more important, most of the writer's attention was devoted to them.¹

TOTOKYA NIGHT IN THE TCIVATO-KIVA

The songs in the *Tcivato-kiva* on *Totokya* night were instructive. At about midnight Anawita, the chief, took a handful of prayer-meal from the tray and deposited it on the floor over the *sipapā*. On this he set his *tiponi*, and drew a line of meal from the latter to the left pole of the ladder, after which he took his seat just behind the *tiponi*. The whole western end of the room was filled with *Kwakwantā* helmets, horns of deer, and other paraphernalia, forming, as Anawita said, a true *poñya* or altar. At Anawita's right sat Nasimoki, and the *Kwakwantā* members were disposed in an irregular circle, leaning against the northern and southern walls of the room.

Basket-trays, with sacred meal and *nakwakwaci*, were placed

¹ It is quite impossible for a single student to adequately witness in one presentation all the events of any of the great ceremonies of the Hopi. On *Totokya* night of the New-fire ceremony rites were being performed in three different rooms at the same time. The writer patrolled from one kiva to another, passing into the superheated rooms again and again throughout the night. The outside air was bitterly cold and the passage from one kiva to another on the mesa summit is often dangerous on account of the darkness. Some of the rites consequently may not have been observed on account of the impossibility of witnessing all the features at once.

on the floor on each side of the *tiponi*, and the medicine-bowl was near by. The asperger sat near the bowl, and in front of him there were several wooden slats, each representing the Great Snake. The pipe-lighter sat near the fireplace, and the man who tended the fire squatted under the ladder. A song score was kept by the pipe-lighter with kernels of corn, and each member of the society had an ear of corn tied to his breast by a string or piece of cloth. Many carried wooden slats in their hands, and each had a white crescent painted under the left eye.

At half-past one o'clock the tyler took his station on the kiva hatch, and the asperger, dipping the aspergill in the medicine, asperged to the cardinal points. Anawita and Nasimoki began a song, in a very low tone, accompanied by the others ringing copper bells. Each man held in one hand his wooden effigy of the Great Snake.

The medicine-bowl had been placed directly on the stones of the floor, not on the sand, and there were no meal lines below it and no ears of corn or birdskins arranged radially about it as in former celebrations. The songs were intended to consecrate the prayer-sticks which were placed in basket-trays on the floor. These songs never rise above a low murmur, and only the chief sings—the remaining priests beat time to the song.

In the fourth song Anawita rapped on the floor with his agave rod to which cornhusks were tied; and the fifth song was a rapid quickstep in which the din of the cowbells was almost deafening. During the sixth song the medicine-bowl was raised a few inches from the floor, and every priest beat violent time as the song progressed. The seventh and eighth songs were also accompanied by violent rapping on the floor and long-continued clanking of the cowbells.

At the close of the songs all the priests, one after another, stepped to the *tiponi*, sprinkled it with meal, and threw a pinch of the same along the floor toward the ladder. The chief then prayed, after which the pipe-lighter passed the pipe to him, and

at about three o'clock in the following morning the exercises were concluded with a formal smoke, when the two *Alosaka* men came to get their prayer-offerings.

NOVEMBER 17—TIHUNI OR PIQUMNOVI

The fifth day of the New-fire ceremony, in its abbreviated presentation, is called *Tihuni*, and as one of several purificatory rites occurs on that day it is also called *Navotciwa*.

The events of the fifth day may be considered under two headings: 1, Visits of six youths with prayer-offerings to the shrines of *Talatumsi* and the spring called *Tawapa*; 2, Disposal of the embers of the sacred fire.

At the earliest light, on the fifth morning, a few *Tataukyamá* priests sprinkled broad trails of meal from the *Wikwáliobi-kiva* through the passageway to the *Tcubmo*, then across it to the *Al-kiva* and the neighboring *Tcivato-kiva*, and back to the *Moñ-kiva*, casting what was left into a tray upon the hatchway, after which all descended into the room.

On this morning everyone, man and woman alike, washed his head with amole, and many of the mothers performed the same for their children. It is customary for all participants in ceremonies to practice this form of bodily purification before rites begin, but its universality in the New-fire rites is noteworthy, for those who had taken no active part in the rites observed it as well as the participants. An explanation of this general and widespread performance of head-washing at this time may be that almost every adult male on the East Mesa belongs to one of the four societies which combine in the celebration of this fire ceremony, and the families of all are directly interested inasmuch as all women brought food to the kivas.

1. *Departure of Six Youths with Prayer-offerings*

Early in the morning six young men of the *Aaltá* society, wearing their typical costume, took all the *nakwakwoci* from their

own kiva and went in pairs to all the other kivas where they were given like prayer objects of the other societies. They received also a considerable quantity of prayer-meal and went off sprinkling the meal along the trails as they departed.

Two of these men went to *Tawapa*, two to the shrine of *Talatumsi*, and two to *Hopakpahoki*, the shrine where the image of *Talatumsi* was formerly kept, but from which it was removed on account of the inroads of hostiles.¹ The trails which these couriers made with meal were so plain that their course could readily be followed, and from them it was possible to discover the shrine in which the image of *Talatumsi* rests. This shrine is a built-up nook in an angle between two large boulders, on the lower terrace of the mesa about opposite the upper stairway trail, on its southwestern point. A rough wall encloses the front of this shrine, from which two stones can be removed. The image sits within the shrine, costumed in a white ceremonial blanket with a girdle in which are two or more prayer-sticks. In the abbreviated New-fire rites two *Alosaka* priests are said to carry offerings to her, but at *Naacnaiya* she is carried into Walpi by Kakapti and set on the kiva roofs where interesting rites are performed about her.

2. *Disposal of the Embers of the New Fire*

The most important ceremony on the last day of the New-fire rites was the purification of the participants and the disposal of the ashes of the new fire from the fireplaces of the kivas. The latter event, which is also a purificatory rite, occurred at early dawn, and each society disposed of the embers from its own kiva in its own way. As has been shown, the flame of the new fire cannot be profaned by lighting cigarettes or by other secular uses, so the ashes must be treated in a reverential manner. They

¹ This last-mentioned shrine is just beyond the Apache and Ute pictographs above the wagon trail to *Wala*, about seventy-five yards west of the count incised on the cliff giving the number of the slain in the last invasion of these nomads.

are therefore disposed of in a ceremonial way befitting the regard in which they are held.

The first society to perform this rite was the *Kwakwantú*, each member of which took a fragment of watermelon rind and scooped into it, out of the fireplace, a quantity of embers and ashes, dividing them into about equal proportions among the members. Special care was taken that all the ashes were removed from the fireplace. Each man then took a handful of sacred meal and, led by Anawita,—Hayi closing the procession,—they all filed up the ladder of the kiva, marched through the plaza under the covered way leading northwestward from the "Snake rock," and then along the alley to the cliff at the western end of Walpi overlooking the site of the old pueblo. There they stood in line facing the west, each man holding the melon rind in his right, and the meal in his left hand. He first cast a little meal on the ashes, then waved his left hand in sinistral circuit over his head four times, and cast the remainder of the meal toward the west. They next threw the melon rinds with the enclosed ashes over the cliff and returned to their houses. These movements were observed almost simultaneously by all members of the society.

The other three societies disposed of the embers of the fire in their kiva in much the same way as the *Kwakwantú*, but went to a different part of the mesa for that purpose. They came out of their kivas bearing in their right hands melon rinds containing the embers of the fire, and filed through Walpi along the main thoroughfare toward Sitcomovi. Passing this pueblo they continued to the western edge of the mesa, each society huddled together apart from the others. The *Aaltú* were more isolated than the other societies, which were together. The manner of performing the purifications was almost identical in all the societies and it took place at about the same time.

The *Kwakwantú* address their purification to the *kateinas* of the Salt cave of the Grand canyon where there are stalactites (*lepena*) believed to be connected in some occult way with the

horns of their helmets. The other societies address themselves to a point near the junction of San Juan and Colorado rivers. All the societies were without ceremonial costumes, but had common blankets wrapped about them. There is much mysticism in the proceedings which thus far the writer fails to understand.

Explanations of many rites are offered by priests, but as there are no means of deciding whether they are ancient and traditional or simply modern and personal, they are not here recorded. In many instances these native explanations in which much esoterism appears to enter, have not been understood; and in some cases it appears evident that the man who gave them was inventing what seemed to him to be a satisfactory solution.

The *Tataukyamû* threw over the cliff with the ashes from their kiva the imitation vulvæ made of watermelon rind, the cornhusks in which their hair had been bound, and the rabbit-tail ear-pendants. The *Wûwûtcimti* cast over the cliff with the ashes from their fireplace the pasteboard flowers which they wore on their foreheads during the last days of the ceremony.

After disposing of the ashes of the new fire, all the priests vomited over the cliffs, as in the last day of the Snake dance, and then returned to their kivas where other purification rites were performed.¹

FOUR DAYS FOLLOWING THE PURIFICATION

Four nights after the close of the *Wûwûtcimti* the chiefs slept in their kivas, and the helmets and other paraphernalia of the *Kwakwantû* remained hanging on the kiva wall. This is believed to be an indication of the connection of the abbreviated ceremonial with the elaborate *Naachaiya*. The latter presentation has nine days of active ceremonies, while there are but five in the *Wûwûtcimti*, without counting the four above mentioned; but if

¹ A simple form of purification consists of taking a little meal or ashes in the left hand, waving it with a circular pass over the head, and throwing it out of the kiva hatch.

these were added to the five, we would have a nine days' ceremony in the abbreviated variant. To this may also be added the days preceding the Assembly and following the Smoke-talk which in the *Wuwütcimti* number five; but the number between the Smoke assemblage and the Assembly (*Yuñya*) in the *Naacnaiya* has yet to be determined.

NEW-FIRE RABBIT-HUNTS

For several days after the close of the festival elaborate rabbit-hunts were organized by the different societies which took part in the New-fire ceremonies. Each society had its own hunt, which occurred on its own day, and the game obtained was eaten in the kiva occupied by the society during the festival.

COMPARISONS OF THE ELABORATED AND THE ABBREVIATED NEW-FIRE CEREMONIES¹

The elaborated New-fire ceremony is made much more complicated than the *Wuwütcimti* by the element of initiation of novices, which gives it the name *Naacnaiya*. It is likewise a nine days' ceremony, instead of one of five days, the episodes of which appear in the following list:

Yuñya, Assembly: 1, Six-directions altars in the *Moñ-kiva*, *Al-kiva*, and *Tivato-kiva*, and accompanying making of charm liquid or medicine. 2, Making of the new fire in the *Moñ-kiva*. 3, Figurine of *Talatumsi* brought into the pueblo from her shrine. 4, Initiation exercises in the *Moñ-kiva*. 5, Initiation exercises in the *Tivato-kiva*.

Custala: 1, Figurine of *Talatumsi* carried to kiva hatch of *Tivato-kiva*. 2, Patrols of the *Kwakwantö* and *Aaltö*. 3, Novices visit shrines. 4, Making and smoking of the snow pipe.

Luchala: 1, *Tataukyamö* dance with *kales*. 2, Boys dressed as women. 3, *Pahas* made.

Paistala: 1, Trails closed; no living being allowed to enter the pueblo. 2, Novices carried to *Custupuntukwi* (Moki butte). 3, Altar constructed in *Al-kiva*. 4, Smoking of the snow pipe. 5, Patrols of the *Aaltö* and *Kwakwantö*; visits to the shrines, and sprinkling of *Talatumsi*.

¹ For an account of these rites see *Four American Folk-lore*, 1892, pp. 189-220.

Naluctala : 1, Sprinkling of the figurine of *Talatumsi* and accompanying songs. 2, Return of *Talatumsi* to her shrine. 3, Dance of the *Tataukyamé*. 4, Dance of the *Wuwátcimá*.

Yuña : 1, Dance of the *Wuwátcimá*. 2, Hunts by the different societies.

Cuskahimá : 1, Dance of the *Wuwátcimá*. 2, Dance of *Aaltá* and *Tataukyamé*, and of *Kwakwantá*, *Aaltá*, and *Tataukyamé*. 3, Beggars ask for meal. 4, Initiation ceremonies in *Tcivato-kiva*.

Kemoktotokya : 1, Songs of the *Kwakwantá* and processions. 2, Public dance of the *Wuwátcimá*. 3, Public dance of the *Tataukyamé*.

Totokya : 1, Dance of the *Wuwátcimá*. 2, Dance of the *Tataukyamé*. 3, Leaping of priests over fire. 4, Lines of meal made in plaza. 5, Procession of the *Kwakwantá*.

Aside from the complicated rites connected with the initiations, one of the most important events in the New-fire ceremony called *Naacnaiya* is the bringing into the pueblo of the image of the Dawn-woman, *Talatumsi*, which occurs on the first day.

Directly after the new fire had been kindled in the *Moñ-kiva* in the *Naacnaiya*, "Kakapti, a member of the Horn society, appeared at the head of the stairway (south) trail, on the edge of the court in which the *Moñ-kiva* is situated. He wore the typical helmet of the *Aaltá*, a large white Havasupai buckskin thrown over his shoulders as a mantle, and a large clanking tortoise rattle on each leg fastened behind at the garters. He crossed the court bearing *Talatumsi* (Dawn-woman), a wooden figurine, eighteen inches high, arrayed in the miniature white mantle and girdle which had been observed in the *Al-kiva* on that morning. Thrust in her girdle were the two sets of *pahos* also noted in the same place. Kakapti held a deer antler in his left hand, and carried in both hands before him the figure as if in a tray. He approached at a very reverential pace, and placed the figurine, facing westward, on the eastern front of the *Moñ-kiva* hatchway where the *natei* stood." On the morning of the next day the figurine of *Talatumsi* was set on the kiva hatchway of the *Tcivato-kiva*, and there it remained until the morning of the fifth day,

when it was returned to its shrine among the rocks by Kakapti, escorted by the four societies, especially the *Aaltâ*.

The sacred character of the New-fire rites, in their elaborate form, may be seen from the fact that the trails to the pueblos are "closed" by drawing a line of meal across them. In former times, it is said, this tabu was very strict, and anyone who ventured to cross the lines of meal was killed. The symbolic closing of the trails is not observed in the abbreviated New-fire rites.¹

The smoking of the great snow pipe is omitted in the abbreviated ceremony. This pipe, the capacity of which was at least four ounces of tobacco, was manufactured by the *Kwakwantâ* from clay, and was baked by women members of the clan to which this society is related.

The altar of the *Aaltâ* society, in the *Naacnaiya*, is much more complicated than that made in the abbreviated rites, but unfortunately the author has been unable to make a sketch or photograph of this more complicated form. Although we have a fairly complete account of *Naacnaiya* in the article above quoted, there still remain many obscure points which need elucidation, and it is particularly desirable that exhaustive studies of the ceremony be made at Walpi and the other Hopi pueblos.

SOCIAL ORGANIZATION OF THE FOUR RELIGIOUS SOCIETIES WHICH PARTICIPATE IN THE NEW-FIRE CEREMONY

It is of great importance, in all studies of Pueblo ceremonies, to gain accurate knowledge of the relationship of the religious society to the clan. Among the Hopi this knowledge is the key to the history of the ritual. Certain phratries or clans, according to legends, brought to Walpi certain religious societies, and the rites characteristic of those societies are best understood when we know where those clans lived before they joined Walpi and to what other Pueblo stocks they are kin. This connection of

¹ When a line of meal is drawn along the trail, as it is in all great ceremonies, the trail is opened, but when across the trail it is closed.

clan and religious society is intimate, and although difficult to trace in all its significance, it cannot be overlooked in the study of the New-fire ceremony, and therefore merits special consideration. In the following pages will be given the names of the different members of these societies and the clans to which they belonged, followed by a discussion of the legendary derivation of the societies.

The following lists give the names of all members of the different societies who participated in the New-fire ceremony at Walpi. They are arranged under their respective clans, and it will be seen that they come from all three pueblos¹ on the East Mesa, and practically include the whole adult male population.

Members of the Wüwütimtä

Asa clan: Suñotiwa (chief), Kuküte, Tuwakükü, Amitola, Hayo, Mae, Hola, 7. *Tcúa* clan: Kopeli, Moume, Sikyahoniwa, Sanna, "Pinto," Navawinu, 6. *Tuwa* clan: Sikyahonau, Pavatiya, Kaventima, 3. *Pakab* clan: Potca, 1. *Tawa* clan: Sikyapiki, 1. *Piba* clan: Homovi, 1. *Patki* clan: Tcúa, Tukpa, Makiwü, 3. *Kokop* clan: Kunauhia, Katci, Maho, 3. *Katsina* clan: Naka, Talawinuh, 2. *Ala* clan: Sikyaventima, Hoyantiwa, 2. *Tabo* clan: Tcaine, Tu'tci, 2. *Honani* clan: Süta, 1. *Honau* clan: Lelo, 1. SUMMARY: *Asa* (chief), 7; *Tcúa*, 6; *Tuwa*, *Patki*, *Kokop*, 3; *Katsina*, *Ala*, *Tabo*, 2; *Pakab*, *Tawa*, *Honau*, *Honani*, *Piba*, 1.

Members of the Tataukyamü

Piba clan: Hani (chief), Namoki, Siskyamü, Naatiwa, Masahoniwa, Papu, 6. *Honani* clan: Ami, Hezi, Moñwü, Hozcu, 4. *Ala* clan: Sokoni, Sühimü, Pakabi, Nakto, Tcona, 5. *Kokop* clan: Mau, Leso, Nae, Sami, 4. *Leñya* clan: Teizohöya, Turnoa, Sami, 3. *Patki* clan: Supela, Kwazru, Nanaha, 3. *Honau* clan: Nakwalimü, Tawa, Nato, 3. *Tcúa* clan: Wiki, Koyawaiamü, 2. *Pakab* clan: Nae, Piba, 2. *Katsina* clan: Tasi, Siventiwa, 2. *Kuküte* clan: Sükti, 1. *Asa* clan: Wacri, Turkia, 2. *Tuwa* clan: Tcaka, 1. SUMMARY: *Piba* (chief), 6; *Ala*, 5; *Honani*, *Kokop*, 4; *Leñya*, *Patki*, *Honau*, 3; *Tcúa*, *Pakab*, *Katsina*, *Asa*, 2; *Kuküte*, *Tuwa*, 1.

¹ There is no celebration of the New-fire ceremony at Sitcomavi and Hano.

Members of the Aaltá

Asa clan: Tuwasmi (chief), Murna, Talahoya, Hauta, Sikyatala, Nuvati, Chiaswzru, 7. *Honani* clan: Turni, Yoyowaia, Teoketi, Yakwa, Yoyowaia, Soya, Apa, 7. *Tuwa* clan: Sania, Takala, Matco, Kakapti, Matchwufi, Talanainiwa, 6. *Honau* clan: Kotka (chief), 1. *Ke* clan: Ikwioma, Tobí, 2. *Patki* clan: Teasra, Pocto, Kwacakwa, Teino (Teoshoniwú), Wiwila, 5. *Tabo* clan: Talasi, Honauuh, Lele, Letcomo, 4. *Leña* clan: Hayi, 1. *Kacina* clan: Kúkú, Tawaianmú, 2. *Kokop* clan: Sikyane, Koitchwinúh, 2. *Ala* clan: Pontima, Pehma, 2. *Teña* clan: Hoñyi, Lomovoya, 2. SUMMARY: *Asa* (chief), 7; *Honani*, 7; *Tuwa*, 6; *Patki*, 5; *Tabo*, 4; *Kacina*, *Kokop*, *Ala*, *Teña*, *Ke*, 2; *Honau*, *Leña*, 1.

Members of the Kwakwantú

Patki clans: Anawita, Nasimoki, Kwaa, Nakala, Vehti, Poyi, Klee, Klee, Paca, Kela, Sakwistiwa, Citaimú, Suñe, 13. *Tabo* clan: Potkone, Uryi, 2. *Kúkúte* clan: Tubeníya, 1. *Ala* clan: Púche, 1. *Leña* clan: Turkwi, Mohti, Nitioma, 3. *Honani* clan: Cikuli, Totc, (Zuñi), Nanakoci, 3. *Asa* clan: Pehley, Añwuci, Lomaiisba, Turkwenúh, 4. *Tuwa* clan: Naminhu, 1. *Teña* clan: Nuvawinú, Alo-saka, Wikyatiwa, Tenutci, 4. *Kacina* clan: Avaiyo, 1. *Piba* clan: Teali, Letaiyo, 2. *Kaz* clan (*Kolon-towa*): Kanu, 1. SUMMARY: *Patki* (chief), 13; *Asa*, *Teña*, 4; *Honani*, *Leña*, 3; *Tabo*, *Piba*, 2; *Kúkúte*, *Ala*, *Tuwa*, *Kacina*, *Kolon* (of Hano), 1.

THE WÜWÜTCIMTÜ SOCIETY

The *Wüwütcimtú* society is said to have been introduced into Tusayan by the *Patuñ* or Squash phratry, to which the predecessor¹ of the present chief belonged. The clan is now extinct at Walpi, and consequently is not represented in the list of members of the society.² According to several traditions there were *Patuñ* or Squash clans at Awatobi, and as the chieftaincy of the *Wüwütcimtú* was formerly held by a member of this clan it may be that the society was introduced from Awatobi pueblo, just as the

¹ At his death the Squash clan in Walpi became extinct, and the office of chief was transmitted to his son. This is irregular, for the chieftaincy of any Hopi society is always retained in the same clan, so that it falls either to a brother or a nephew.

² *Asa* men predominate in the present membership. See the list.

Piba or Tobacco clan is supposed to have brought the *Tataukyamû* from the same pueblo. Before they came to Tusayan the *Patuñ* clans lived in certain pueblos, now in ruins, along the Colorado river. They first settled in Tusayan, on the Middle Mesa, at a place called Tcukubi, where the ruins of a pueblo of some size may still be seen. The *Atoke* (Crane), and *Kele* (Hawk) clans are also said to have lived with the Squash people at that place, and it is highly probable that they migrated from the south together,¹ entering the Hopi country at about the same time. Like the Squash, the Crane and the Hawk are now extinct at Walpi, but several of the Crane people lived in Walpi and Sitcomovi within the memory of the oldest inhabitant.

It would appear that the cultus ancestral personages of the *Wûwûtcimû* and *Tataukyamû*, whose sister was of the same clan, were descended from Taiowa in the Underworld. Provisionally we may believe that they belonged to the Squash or "Sorrow-making" phratry, as that phratry brought these societies to Tusayan. Taiowa² invented the flute and made the first altars and fetishes. In his visit to the Underworld he met a maid, and drew her toward him (Orpheus-like) by means of this flute. He took her to his house in the Underworld, and she bore him sons and daughters. To one of his sons³ he gave the mysteries of the *Wûwûtcimû*, and taught one of his daughters the secret rites of the *Mamsrautû*, for which reason these two societies, in a sacerdotal sense, are brothers and sisters.

¹ Some good authorities say the Squash clans came from the north.

² Some say Taiowa is a solar god, which harmonizes with the above legend, for the Sun is father of all cultus heroes. The sun emblem plays an important part in the great ceremony (Flute) in which this flute is used. Some Hopi say the Squash or "Sorrow-making" phratry introduced the *Maciletyu* society, one of which bears the sun shield in Miconinovi, and it is a significant fact that both this society and the Squash clan, which are said to have introduced it, are extinct at Walpi.

³ Perhaps two legends are inextricably mixed in the above account, for neither is the flute used in the New-fire ceremony, nor does a representation of the Flower-mound appear in the kiva exercises in that rite. In the Flute ceremony the mound with artificial flowers is made in the kiva, and the idols of the Flute-youth and Flute-maid sit before them.

The altars were erected in the Underworld by the son and daughter some distance apart before the *Atkya Sitcomovi*, "Flower-mound of the Underworld," on which sat the God of Germs. Then the youth called out to his sister, "*I ciwaiya ami nükuc mana*" ("My sister, you are a nasty maid). She replied in kind, and after many gibes and jeers they closed by pouring water upon each other, in jest, "and thus, we hope," the narrator said, "the rain may water our fields."¹ The Squash clans to which the youth and maid belonged are also called *Tubic*, or Sorrow people, possibly from this interchange of rude jests, which is called *tubic-latoto*, "sorrow-making." Muïyinwū, the Germ god, they claim, gave to the boy and his sister the seeds of the corn, melon, squash, and bean, and was probably their mother.

The above legend presents a plausible explanation why it is that throughout the New-fire ceremonies phallic rites are especially prominent, and why ribald remarks of the *Wūwūtcimtū* are especially directed to the women of the *Mamsrautū* society. The clans from which these two societies spring were formerly the same or near akin.

The *Wūwūtcimtū* have on their cheeks the zigzag marks which are characteristic of the *Hehea-katcina*, and during the New-fire rites they wear on their foreheads rosettes made in imitation of flowers. We find a similar artificial flower worn by personators of the *Hehea-katcina* in the *Powamū* ceremony at Walpi; and in the burlesques of the *Wūwūtcimtū* by the women in their ceremony called *Mamsrauti*, zigzag markings are painted on their cheeks to denote *Hehea-katcinas*. These facts indicate an intimate connection between the *Wūwūtcimtū* and the *Hehea-katcinas*.

It may be interesting here to note several so-called shell masks obtained from Tennessee by Professor Putnam, and others from Virginia described by Mr Carr,² which have zigzag lines

¹ The key to all ceremonies is embodied here. The priest imitates the natural processes he wishes to bring to pass, or shows the god what he wishes him to do.

² *Tenth Annual Report of the Peabody Museum.*

under the eyes like the Hopi *Hehe-katcinas*. The Hopi priests, to whom copies of the figures of these objects were shown, identified them as masks of *Hehe*, so close was the symbolism. It has been suggested that the zigzag lines on the Tennessee shell masks represent tears, on the supposition that they were mortuary; but this explanation is not accepted by the Hopi priests, although they have given no lucid explanation of the meaning of the zigzag symbols. In a doll of the Zuñi *Hehe* they are replaced by parallel lines, which are also found on an effigy vase from a cave in the Nantacks elsewhere described.

THE TATAUKYAMŪ SOCIETY

Hani, chief of the *Tataukyamū* society, is also chief of the *Piba* clan, and claims that the society was introduced into Walpi by his ancestors.¹ He says that Tapolo, who admitted the hostiles into Awatobi on the night that pueblo was destroyed, was chief of the *Piba* clan and of the *Tataukyamū* priesthood, and that he is Tapolo's direct descendant.

The home of the *Piba-Tabo* clans before they went to Awatobi is fairly well known, for legends state that they formerly lived with the *Patki* and Squash clans in now-ruined pueblos along Little Colorado river. Near where Cheylon fork flows into the Little Colorado, on its left bank, there is a ruin called by the Hopi *Cakwabaiyaki*, "Blue-running-water pueblo." This place is often visited by the Hopi, and from the Cheylon they procure water to use in some of their ceremonies. A doll representing a *Tataukyamū* priest was identified for me as one of the *cakwabaiyakyamū*, or priests from *Cakwabaiyaki*; and as the *Piba* clans are said to have brought the *Tataukyamū* to Tusayan from the pueblo on the Little Colorado south of Walpi, it is reasonable to conclude that this pueblo was that now in ruins on the Cheylon. In the

¹ *Piba* men now predominate in this society. See the preceding list.

Piba-Tabo clans we find a *Tawa* or Sun clan, and possibly the name *Tataukyamt*¹ refers to that clan.

Like the *Wuwatcimth*, the public dances of this society during the New-fire festival have a phallic import, which is suggested in the decoration (?) of the bodies of its members with phallic emblems, their bawdy gestures, and the objects which they carry in their hands. Their remarks are especially directed to the women of the *Mamzrauth* society which, like the *Tataukyamt*, was formerly represented in Awatobi. Their coarse ribaldry, obscene gestures, and drenching with foul liquid are simply repetitions of what legends say took place in the Underworld, as mentioned elsewhere when the youth and his sister quarreled before the altar of the Germ god.

A complemental portion of this ceremony when the *Tataukyamt* jeer at the women and greet them with obscenity, is thus described in the writer's account of the *Mamzrauth*: On the eighth day, "before sunset, twenty-one persons, nearly all young women and girls, came down into the kiva, wearing nothing but their oldest and shabbiest tunic gowns and girdles. They rubbed their bodies with mud, in the eastern corner of the kiva, as on former evenings, and then decorated themselves by tying their hair up with cornhusks and plumes in a cone over the forehead. They adorned themselves with rabbit-skin tufts for eardrops and necklaces, and painted red (*cuta*) across the face. Each took an ear of corn and one took a drum."

"Having thus arrayed themselves they made an entire circuit of the village, imitating the *Tataukyamt*, singing, and pointing the ears of corn in a sarcastic fashion to the men, who came to the edge of the house terraces as did women of the *Mamzrauth* in the New-fire ceremony. They sang many jesting songs, in which they pretended great anger and denounced the men as

¹ On account of the similarity of the words *tawa*, "sun," and *tawald*, "to sing," the derivation of *tataukyamt* is not clear.

² Compare this costuming with that of the *Tataukyamt* on *Totakya*, the final day of the New-fire ceremony.

being lazy and worthless, declaring they had come to kill them as the Apache used to do. Some of the other songs, as the snow chant (*Nuvaitwinu*) and certain moisture chants were very pleasing melodies.

"The men pretended to be angry, and poured water on the women, throwing it promiscuously, as a general thing, but in many instances particular young women were singled out, chased, and douched, and thus from home to home the women continued their serenade. About half of the jars emptied on them contained urine, most of which had been standing long enough to partially decompose, and the stench in the courts was almost overpowering, although a high wind was blowing. Half a dozen of the young women were chased by the men (no women threw any liquid or took part except the celebrants), and these were either thrown down (not violently) or laid down, when overtaken, and when about a dozen men had surrounded one woman, they rubbed filth in her hair, on her face, and over the upper part of her bosom and neck. They raked this filth with their fingers from the moist alley corners, and in one instance, at least, a man was seen to rub a girl with ordure. A crowd followed the singers and keenly enjoyed the foul fun. Completing the circuit of the village, on reaching the *Alkiva* they darted down and laid their ears of corn on the altar, but all the young women ran home, changed their drenched gowns, and rinsed their hair. The elder women neither washed nor changed their clothes, but simply laughed and remarked upon the awful stench, saying it would soon pass."

Thus do the women of the *Mamzrautú* and the men of the *Tataukyamú* dramatize the frolics which the son and daughter, children of Taiowa, cultus hero and heroine of the two societies, performed in the Underworld before the altar to Muiyinwá, the mother of both societies.

Similar episodes in which *Mamzrauti* personations figure occur also in a *katsina* called the *Powamú*. Thus, on one of the

last days of this ceremony at Walpi, while the personators called *Natackas* are going the rounds of the pueblo, there emerged from the *Alkiva* six men arrayed and costumed as the *tsatunakaa* of the *Mamsrauti* dance, who, singing as they went, marched to the dance court and halted near the edge of the cliff, facing the houses. The *Natacka* group accompanied them, and two men personifying *Hehea-katecinas* assumed erotic paroxysms and lay down on their backs on the ground close to the disguised *Mamsrauti* personages, endeavoring to lift up their kilts, and performing obscene actions. Then they rolled on the ground in assumed fits. . . . After about five minutes of this exhibition the *Hehea* seized the *Mamsrauti* personators and tumbled them into an indiscriminate heap, fell on top of them and did other acts which need not be described.

The reader's attention is called to the fact that here we have the *Wüwütcimtä* represented by *Hehea-katecinas*, the symbolic marks of which they paint on their faces in the New-fire ceremony. These *Hehea-katecinas* treat the *Mamsrau* personators much as the *Wüwütcimtä* do the same in the public dances in the New-fire ceremony.

There is a public dance at sunset of the last day of the *Mamsrauti* which is called *Palahiktiva* from the fact that *Palahikomaná* is personated, which corresponds with the exhibition of the *Tataukyamá* on the fifth day of the New-fire ceremony. About thirty participants celebrated this dance, and they dressed themselves for the representation in their kiva. They first daubed their feet, arms, and necks with muddy sand, and fastened their hair with cornhusks in a mass on the crowns of their heads. Preceded by a drummer they went to the eastern end of the plaza, at the edge of the cliff. Before them danced four maids costumed alike. They wore on their heads a tablet fastened vertically by a string passing under the chin. Their hair was hanging loosely down their backs, their faces were coated with white meal, and a string of turquoise beads hung from each ear lobe;

a white blanket girt with a belt covered the body, and in each hand they held, about vertically, two eagle-tail feathers. These girls represented the *Palahiko-mana*,¹ but are not personated in the *Mamsrauti* at every presentation.

In the presentation of the *Mamsrauti*, at Walpi, in 1893, there was a modification in the symbolism of the actors who address these jeering songs to the men. This episode is called the "Kohonino" (Havasupai) dance and is supposed to have been derived from this people inhabiting Cataract canyon.

Among the dolls frequently offered for sale at Walpi there is one called the "Kohonino *kacina*," which is a close imitation of the symbolism of the women in the dance referred to, so that its designation as a *kacina* refers more to its general supernal nature than to its sex.

Two days after the dance of the *Palahiko-mana*, in the celebration of the *Mamsrauti* in 1893, this Kohonino dance was performed in the courts of Walpi. There were three groups of participants: (1) Five maids with yucca fillets bound on their foreheads; (2) Six maids wearing two lateral horns on the head, attached to a band; (3) A group of women, one of whom had a drum, serving as the chorus.

The first group wore an ordinary dark blue blanket, but no mantle, although many had a piece of calico over the shoulder. Their faces were rubbed with meal, and across the nose and cheeks was drawn a curved line by means of the finger tips dipped in moistened shale. They wore many necklaces and in their ears strings of turquoise. All were barefoot and faced the chorus or third group. In their right hands they carried gourd rattles, and ears of maize and strings of fancy bread in the left. The bread and other food they later gave to the spectators, generally men or boys.

¹ The symbolism of *Calaho-mana* is so close to that of *Palahiko-mana* that they are regarded as practically identical personages. Sometimes instead of being personated by girls they are represented by a picture on a wooden tablet.

The second group, composed of six young women, wore on their heads a fillet made of willow wrapped with strips of red, green, and white cloth. To the front of this fillet, over the forehead, were tied several downy feathers from the eagle's body. To the back of the fillet was attached a bunch of paroquet feathers and several vertical radiating parrot tail-feathers. On each side of the fillet there projected a horn made of a flat slab of wood striped in different colors, either painted or bound in strips of colored cloth. The face of each woman was covered with meal and a bright vermilion spot appeared on each cheek. She wore a *kwaca* and an *atūū*¹ blanket and had moccasins on the feet. In her hands each woman of the second group carried a Havasupai basket which she held as do the Hopi women in the *Lalakoñti* dance. The women of the second group alternated in line with those of the first, and during the songs they moved their baskets in cadence with the songs.

The third or largest group of women in this Kohonino dance surrounded one of their number, the drummer, and sang various stirring songs. They introduced in their songs names of prominent men, calling them gluttons, filthy, lecherous, accusing them of many crimes and peccadillos. They satirized, however, only members of the *Wūwūteimti* and *Tataukyamā* societies, for they stand in awe of the *Kwakwantā*² and the *Alosaka* or *Aaltā*.

THE AALTĀ SOCIETY

There is great obscurity regarding the clans which introduced the *Aaltā* society into Walpi, and statements of different traditionists on this point are not easily harmonized. The *Aaltā* are also called the *Alosaka*, whom they personate in wearing the imitation horns of the mountain sheep. The relationship of the *Alosaka* cult to the Hopi ritual has elsewhere been discussed and

¹ *Kwaca*, the ordinary dark blue blanket; *atūū*, white with red or green borders.

² Sacerdotally the *Kwakwantā* and *Lalakoñti* societies call themselves brothers and sisters, which probably means that they were both evolved from the same clans, the Rain-cloud or *Patki*.

the conclusion reached that this cult was introduced by the Squash people from southern Arizona; but it will be seen that the *Asa* and *Honani* clans, both of which came from the Rio Grande pueblos, are prominently represented in this society. It would seem perfectly natural to associate the *Aaltá* or Horn men with the *Ala* or Horn clans, especially as *Pañwu*, the Mountain sheep, is often relegated to these clans. The *Aaltá*, however, associate with societies which have no connection with the *Ala* clans.

There is good evidence of a personification of *Alosaka* in the cult of the *Ala-Flute* people of Walpi. Thus, in the Flute observance of Walpi, we find *Alosaka* personified by Amitola on the fifth day,

"Amitola [of the *Asa* clan] arrayed himself in a white kilt and painted a streak of white under his right jaw and a curved mark under his left eye. He tied a tortoise rattle below each knee and adorned himself with many bead necklaces, putting the *Alosaka* head-dress (helmet with two horns) on his head. He took a *moñkoku* in his left hand, and a tray of meal in the right. He sprinkled the trail with meal, likewise making upon it symbols of the clouds. Cimo donned his white kilt, and moved the tiles in succession from one to another of the cloud symbols made by Amitola (*Alosaka*). All the other priests stood in a group at the beginning of the trail, where Cimo stood holding the tray of yellow pollen and *Honiyi* the blue. Sikyaustiwa had a meal tray; the others carried rattles. All then sang, Lesma (*Hani*) playing the flute. As they sang *Alosaka* moved the staff (*natei*) and tiles, advancing them one symbol (cloud) at a time, and then carried them up the ladder. The procession followed slowly in four lines of four each, close along the pollen trail, singing as they walked. After *Alosaka* had carried all the tiles and the *natei* staff to their ultimate positions, the four chiefs, sprinkling meal as they advanced, went up on the roof. *Alosaka* returned to the chamber, but the others remained singing, and only four chiefs mounted the roof. The sun rose before the ceremonial raising of the standard on the roof had ended."

At the dramatization of the reception of the Flute priests by the Bear and Snake chiefs on the eighth day, *Alosaka* likewise is present at Walpi and performs a significant part. He draws the

line of meal on the ground and makes four cloud symbols in meal just as he did when the standard was carried to the housetops on the previous day just described. The priests advanced from symbol to symbol, halting at each to repeat a stanza of their song. At the close *Alosaka* drew the end of his *moñkoku* along the line of meal (as in the exercises of *Yuñya* at the conclusion of the New-fire ceremonies), erasing it from the floor of the *Moñ-kiva*. On the ninth day he escorted the procession of Flute girls, the Flute boy, and others to the spring called Tawapa. Finally *Alosaka* headed the procession from this spring to Walpi on the closing day of the Flute ceremony at Walpi.

The *Ala-Flute* legends likewise mention the existence of *Alosaka* among the ancestors of this group of clans when they joined the Snake phratry at Walpi, which would seem to indicate the existence of a phase of the *Alosaka* cult in the former home of the *Ala* clan at Tokonabi in southern Utah. As supporting this evidence the existence of a Mountain-sheep clan among the *Ala* and the personation of *Alosaka* in the Flute ceremony at Walpi may be mentioned.¹ The name of the *Ala* clans is also significant in this connection, and it is not improbable that a form of *Alosaka* cult may have been introduced by the *Ala-Flute* phratry.

The *Ala* clan long ago lived with the Snake clan at Tokonabi, on Colorado river, not far from Navaho mountain. For some reason these clans and others associated with them migrated southward. The *Ala* separated from the Snake at a place called Sisikibi. The former continued southward and founded Old Walpi; the latter went eastward and eventually united with a large settlement of Flute people at Leñanabi, the ruins of which lie about thirty miles from Walpi. The combined *Ala* and Flute clans later abandoned Leñanabi and joined the Snake people at Walpi, as biennially dramatized.

¹ There is no personation of *Alosaka* in the public Flute dance at Oraibi and the Middle Mesa, and there is also no representation of the *Ala* clans.

The claims of the different clans that their ancestors introduced the *Alosaka* may be harmonized by provisionally accepting them with the reservation that there were formerly different aspects of this worship which have now become so amalgamated that it is impossible to separate them. The escort duty of *Alosaka* may readily be referred to an introduction by the *Asa* clans, while the Squash phratries may have brought other phases of it as legends recount. There is no doubt, however, that there was an *Alosaka* worship at Awatobi, where the shrine and idols of the *Alosaka* of that pueblo are known, and where there were Squash clans; nor does there seem to be any doubt that these clans once lived on the Little Colorado far south of Walpi. There are also legends that on the Awatobi mesa there was once a pueblo called Tcúibki, which would imply Horn (*Ala*) clans.

The clan composition of the *Aaltú* society is: *Asa*, 7¹; *Honani*, 7; *Tuwa*, 6; *Honau*, 3; *Putki*, 5; *Tabe*, 4; *Lehya*, 1; *Katcina*, 1; *Kokep*, 2; *Ala*, 2; *Tcha*, 2; *Isauah*, 1; *Piba*, 1. There are two *Aaltú* chiefs, one, Tuwasmí, from the *Asa* clan, the other, Kotka, from the *Honau* or Bear clan, one of the oldest in Walpi. This dual chieftaincy is certainly suggestive of a dual origin, and, as elsewhere shown, the *Alosaka* cult shows evidences of a dual nature.

THE KWAKWANTÚ SOCIETY

More definite information can be given regarding the ancient home of the clans which brought the *Kwakwantú* society to Walpi. The *Kwakwantú* or *Kwani* (Agave) priesthood was introduced by the *Patki* or Rain-cloud clans from Palatkwabi, the mythic "Red Land of the South." This society, in which *Patki* men outnumber all others, is a fraternity of warriors, and their chief, Anawita, personates a Fire-god in the New-fire rites.

Each member wears on his head a gourd helmet with a long

¹ So far as numbers go a majority of the *Aaltú* belong to *Asa-Honani* (14), and the *Tuwa-Patki-Tabe-Piba* (16). Thirty out of forty-three members belong to these two groups of clans, one of which came from the Rio Grande, the other from the Gila

curved extension ornamented on each side with a rain-cloud symbol. Each also carries a small wooden effigy of the horned serpent (*Palulukoñ*), which may possibly be a totemic badge. One of the characteristic marks of the society is a white crescent painted under the eye. The *Kwakwantá* as a society claim that the women who celebrate the *Lalakonti* are their sacerdotal sisters.

CEREMONIAL PARAPHERNALIA MOÑKOHUS

Two of the societies carry in their hands wooden objects called *moñkohus*, "chief's wooden slats," which appear to be badges, but their exact meaning is problematical. The *moñkohus* of the *Kwakwantá* society were small flat slats of agave stalks with the head of a horned snake carved on one end. These slats, as a rule, were slightly curved, painted white, with four incisions arranged in pairs on one side. They were carried horizontally in the hand by a string fastened in the side opposite the notches. That these objects are effigies of the Great Horned Snake there can be no doubt, for many of them are very realistically carved, and the name *Palulukoñ* is applied to them.

Among the larger whitened stalks of agave used by the *Kwakwantá* society there is one six feet long and of proportionate thickness, which has the head of the Great Snake carved on the end. This herculean club is carried by the chief and the conductors of the novices in their nocturnal patrols. Bearing in mind the claim of the *Kwakwantá* that their clan in the *Patki* introduced the Plumed Snake¹ cult into Walpi, and the fact that they carry slats carved in imitation of snakes, the reader's attention is called to the staffs representing snakes which occur so constantly in Nahua pictures of gods.¹

¹ The [Nahua] word *cōhuatl* (snake) secondarily designates any implement in the nature of a stick or staff. It was from his wooden staff, decorated with plumes, that Quetzalcohuatl derived his name, precisely as that of Texcatlipoca was derived from his fiery shield: this is clear from the circumstance that this staff appears in some of

The *moñkohus*¹ of the *Aaltá* society were also flattened sticks, painted white, and suspended by a cotton string. To them were fastened four eagle feathers, but in no instance had they the form of snakes. At one end of these sticks terraced figures, representing rain-clouds, were cut, and across them lines representing falling rain were drawn (plate IV, 3, 4).

I have not observed *moñkohus* in the hands of the *Wüwü-teimtä* and the *Tataukyamä*, both of which societies, however, have ears of corn in their hands in their public performances. These *moñkohus* are evidently badges, and the fact that those of the *Kwakwantä* have heads of a horned snake cut upon them is significant. The *Kwakwantä* society is reputed to have brought the cult of the Plumed Snake, *Palulükoñ*, to Walpi, consequently these sticks are possibly totemic in character.

The members of the *Aaltá* society, however, do not bear these totems, but on their *moñkohus* we find rain-cloud and other symbols. These objects are called *hümi-moñkohus*, i. e., corn *moñkohus*; the terraces at their extremities, *emautcoki*, and the feathers suspended to them, *paho adta*, i. e., "its *paho*."

ALOSARA HELMETS

The head-dress worn by the men of the *Aaltá* society represents horns of the mountain sheep, mounted on a cap of basketry. These horns, which are often of huge size, are made of buckskin and painted white. Raw cotton is glued to them, and feathers attached to strings hang down over the face of the wearer.

The novices of the *Aaltá* society, in the abbreviated presentations preceding their final initiation, wear a basket helmet with

the Mexican pictures in the form of a snake having plumes attached to its head." Payne, *History of the New World Called America*, vol. 1, p. 590.

¹ From the forms of these objects little idea can be obtained regarding what they represent. From the fact that the *moñkohus* of the *Kwakwantä* have snake heads upon them, and are totemistic, it would appear that the *moñkohus* of the *Aaltá* had the same import, but of this there is no proof. The women of the *Manizwantä* society carry in their hands wooden slats upon which ears of corn surmounted by their totems are represented.

short curved gourds painted green and white, representing the half-grown horns of the mountain sheep. On their final induction into the society they are permitted to wear the large horns made of buckskin, a specimen of which is elsewhere figured.¹ Novices of the *Aaltá* have a blue or green crescent painted under one eye, in contrast with the white crescent of the *Kwakwantú*.

KWAKWANTÚ HELMETS

The members of the *Kwakwantú* were observed to wear two kinds of helmets, one with a single long curved gourd representing a horn (plate IV, 5), the other with a round top, but hornless. Both were painted white, and on each side there was a triple rain-cloud symbol in black outline. Raw cotton was attached to these objects, which were mounted on a close-fitting basketry cap to the rim of which stringed feathers were fastened. The single-horn helmets were called *tokonaka*; the hornless ones, *tutumbeca*. Concerning the meaning of these objects the best information elicited from the priests was that they represented chiefs, a common way of designating ancestral clan totems. Figures of gods with a single horn ornamented with rain-cloud symbols, to all intents and purposes identical with the *tokonaka*, are called *Cotakinuñwa*, "Heart of All the Sky," or the Sun; and the association of this god with lightning and sun emblems might indicate that *Tokonaka* is a solar or sky god.

GENERAL REMARKS ON THE NEW-FIRE CEREMONY

Were this article intended as a comparative treatment of New-fire rites we might instance many examples among other races where ceremonies similar to those described in the preceding pages are performed; but such comparisons would be imperfect on account of the great mass of detail on Pueblo New-fire rites which as yet is unknown. This festival is celebrated in five of

¹ Fifteenth Annual Report of the Bureau of American Ethnology. The helmet of the novices is called *cañwa ala*, "green horn," aptly so called; that of members, *pañ ala*, "mountain-sheep horn."

the Hopi pueblos, yet we have not a single fact in regard to the ceremony in any pueblo except Walpi. The same obscurity envelops the rite at Zuni, Jemez, and the Rio Grande pueblos, where most instructive fields of research await the ethnologist. In a general way it may be said that the Walpi New-fire rites are to be regarded as fire worship, but more specifically as sun and germination worship, all of which are intimately connected. The *Aaltá* and *Kwakwantá* societies, which kindle the new fire, are not those which perform the erotic dances; and the other two, *Wúwátcimá* and *Tataukyamá*, take no part in the act of kindling the new fire.

The most important conclusion reached from these studies is that the rites described were brought to Walpi by clans which once lived in Gila valley. It remains to be seen how closely they resemble the New-fire rites of the aborigines of Mexico.

THE TOARA CEREMONY OF THE DIPPIL TRIBES OF QUEENSLAND

By R. H. MATHEWS

As no description of the *To'-a-ra*¹ ceremony of initiation has hitherto been published, I shall endeavor to give a brief account of it, gathered from the natives, in which the principal parts of the ceremonies are detailed with sufficient fulness, it is hoped, to enable comparison between this and similar rites in different parts of Australia. The country occupied by the people among whom the *Toara* is practised comprises the Queensland coast from Port Curtis to the New South Wales boundary, extending inland to include the valley of Dawson and upper Condamine rivers. The principal languages prevailing in this area are the Dippil, Tur-rubul, Kahbee, Goonine, Kurranga, Kanalloo, and others. I have given the name of the first-mentioned tribe to the whole group, as their language is the most widespread and best known. All these tribes are divided into four intermarrying sections known as Barrang, Banjoora, Bunda, and Terrawine²; the first two form a phratry called Karpeun, and the latter two constitute the Deeyajee phratry.

When the headmen consider that there are a sufficient number of youths old enough to be admitted as men of the tribe, messengers are despatched to invite their neighbors—who will probably also have some boys of suitable age—to participate in the ceremonies. When a messenger arrives at his destination, he approaches the men's quarters about sunset, and, sitting down, commences tapping two boomerangs together, or a boomerang

¹ Also pronounced *De'-a-ra* and *Tao'-a-ra* in different parts of the district.

² *Australian Divisional Systems*; Journ. Roy. Soc. New South Wales, vol. xxxii,

and a throwing-stick. When this is heard in the camp, all the men give the shout usual on the arrival of a stranger. The messenger again taps his boomerangs, which is answered as before. He repeats the tapping for the third time, and the men in the camp proceed a short distance toward him and light a fire. A few of the chief men then go to the messenger and invite him to come up to the fire. On his arrival there, the oldest man present says to him, employing the indirect form of speech used in connection with secret matters, "You appear to have found something"—to which the messenger assents. "Where did you find it?" is next asked, upon which he states the name of the hunting grounds of his own tribe, and proceeds to deliver the details of the message, accompanied by the sacred bullroarer, which is always used on these occasions.

In summoning the tribe who are to act the part of liberating the novices from the men who have the custody of them in the bush, as later described, the messenger, in addition to the usual emblems of his mission, hands to the headman a small parcel, wrapped in tea-tree bark, consisting of a portion of a feather or of a porcupine's quill, a piece of an animal's skin, or the like, and tells him that the other part of it is hidden in the embankment bounding the *Toara* circle.

While the several envoys are away assembling the neighboring tribes, the local mob is engaged in preparing the ground for the reception of their visitors. A clear, level spot is selected near the camp, and all the grass and rubbish removed from the surface. Around this space small logs and sticks¹ are laid in the form of a circle, and are covered with loose earth, forming a low wall or embankment about 18 inches high. The space thus enclosed ranges from 70 to 100 feet in diameter, according to the number of people who are expected to attend. In a secluded locality about a quarter or half a mile away (the distance depending

¹ This way of building the embankment differs from that ordinarily employed in other communities, which consists of heaping up the loose earth only.

upon the character of the country), another round space is cleared and enclosed in the same way. Within this second circle two stumps, resembling those used in the *goonaba* enclosure of the Kamilaroi tribes,¹ are inserted in the ground. A small opening is left in the surrounding wall of either circle, and a narrow cleared pathway leads through the forest from one to the other. None of the trees is marked, either at the distal circle, or along the path.

The preliminary performances at the main camp, the procedure on the arrival of the different strange tribes, and other routine matters so closely resemble corresponding portions of the ceremonial of other communities with which I have dealt, that they will not be described here. When the tribe to whom the portion of feather or other secret object has been sent has arrived at the *Toara* ring, the headmen commence to search for the other moiety, which is concealed somewhere in the earth and logs of which the embankment is composed. When it is found there is much rejoicing, and the men dance round the ring shouting the names of male and female genital organs, shady trees, hills, and some of the totems of their tribe. If the object has been hidden by covering it in such a way as to render the search for it unreasonably difficult, the tribe who are expected to discover it may quarrel with the local mob, which may result in a fight.

On the eve of the day settled upon for taking charge of the novices who are awaiting initiation, all the people of both sexes move up close to the *Toara* ring, where they encamp for the night. Shortly after daylight next morning the novices are painted all over with red ocher and grease, and are placed sitting with their heads bowed, close to the embankment. Some small green bushes are then held for a few moments in the blaze of a fire, after which the leaves are pulled off, and whilst still warm are rubbed on the bodies of the novices.

When all preparations have been completed, the men stand

¹ *The Bora of the Kamilaroi Tribes*; Proc. Roy. Soc. Victoria, vol. IX, B. S., p. 143.

with their faces toward the farther ring and shout, and stamp with their feet, whereupon the mothers of the novices, who are carrying burning brands, step on top of the embankment, and throw the fire-sticks into the central part of the ring. The other women and some of the men throw burning sticks in the same way. The guardians now help the novices to their feet and conduct them along the path toward the other enclosure. A number of armed men then emerge from the scrub on one side, as if they were a strange tribe, and throw spears and boomerangs over the heads of the men and boys as they march along.

On reaching the farther ring, the novices are placed standing in a row near the entrance, and are permitted to raise their eyes and observe two old men who are standing upon the stumps, before referred to, within the enclosure. The heads of the novices are again bent down, and they are led away by their guardians to a camp in the bush. The stumps are then pulled out of the ground and burnt by some of the men who remain behind for that purpose. It should be stated that as soon as the boys were taken away from the *Toara* circle, the women followed them for 50 or 100 yards. They then turned back and packed up all their movables, and, accompanied by some old men who had been instructed to remain with them, went away to another camping place some distance off.

We must now return to the novices. At nightfall a convenient camping place is reached, and a bough yard made for the boys, with green leaves strewn on the floor for them to sit or lie upon, accompanied by their guardians. The rest of the men, who are collectively called the *kooringal*, camp near by, and during the evening imitate different animals, some of which are the totems of those present, while others are connected with myths and superstitions current among the people. These performances are in the main analogous to what I have reported in other tribes.

Next morning, or the day following, each novice is subjected to the extraction of one of his upper incisor teeth, the process

being substantially the same as that adopted in the punching out of a tooth in the *Bunan* ceremony previously described.¹

The novices are taken out hunting with the men during the day, but as they are required to keep their hands shut, both in the camp and in the bush, the guardians open their hands and place a *waddy* or other weapon in them, when they are allowed to join in the pursuit of game.

One day the *kooringal* take the novices into a place where there is very tall grass, or else a thick patch of scrub, or it may be near a deep gully or dry watercourse. Presently a whistling noise is heard, and also the rattling of weapons. The *kooringal* pretend they think it is a strange tribe coming to attack them, and prepare to fight. In a few minutes a considerable number of men, all in their war-paint, rise out of the long grass, or emerge from the scrub, or sally forth from their hiding place in the deep ravine, as the case may be, and running toward the men and novices, commence throwing spears. An apparently real encounter takes place, in which the novices participate, and after a while the strangers retreat and disappear. That afternoon the bullroarer is exhibited to the graduates, with the customary solemnities. A smaller implement, called *bundandaba*, resembling the *moonibear*² of the Wiradjuri tribes, is also shown to them. The bullroarer is rubbed on the penis and navel and also under the arms of each novitiate.

Early next morning, in the vicinity of the camp, some men climb trees in which the top foliage is sufficiently dense to hide them, and shout in a clear, weird voice. These men represent the Deeyajee and Karpeun groups: the men of the former occupy the trees on one side of the camp, and the latter ascend trees in the opposite direction. Several other men sit in a cleared piece of ground, the surface of which they beat with strips of bark held in the hand, and in this way make considerable noise. Every novice is brought out in rotation by his guardian, and after some

¹ *The American Anthropologist*, vol. ix, 1896, p. 338.

² *Journ. Anthropol. Inst.*, Lond., vol. xxv, p. 311.

deliberation among his kinsfolk, he receives a new name, by which he shall thenceforth be known by his fellows. As each boy is named, all the men give a shout, which is answered by the men in the tops of the nearby trees, giving the novices the impression that ancestral spirits are hovering about in the air. When a Deeyajee boy is named, the men of that division up in the trees imitate the noise made by his totem, or that of some of his relatives—as the trumpeting of an emu, the song of a locust, the howling of a dingo, and so on. A Karpeun boy is next led forward and named, and the men in the trees on the opposite side of the camp imitate certain animals. The headmen say to one another, "Those ghosts have flown over there now," indicating a certain direction with the hand, to make the boys believe that the noise emanates every time from the same individuals, who pass through the air unseen from one side of the camp to the other.

The remainder of the ceremony will be passed over as briefly as possible, because the procedure closely resembles corresponding parts of the ritual elsewhere described in detail. On arriving near the place to which the women had removed the camp, as above stated, the novices are met by their female relatives and are passed through a dense smoke caused by placing green boughs on a wood fire. They are then taken away into the single-men's quarters, where they remain for a period regulated by their age, but they generally have to pass through several *Toaras* before they are permitted to associate with the women or to take a wife.

During this long sojourn in the bush, the graduates are taught a mystic language which is understood by none but those who have passed through the prescribed course of instruction.¹ Particulars relating to the use of stercoraceous matter, the mythology of the tribe, the sacrifice of one or more men during the inaugural gathering, the restrictions relating to the eating of certain foods, and other matters, have already been given in other articles.

¹ *The Bûrûng of the Wiradthuri Tribes*; Jour. Anthropol. Inst., Lond., vol. xxv, p. 310.

THE LORDS OF THE NIGHT AND THE TONALAMATL OF THE CODEX BORBONICUS

By CHARLES P. BOWDITCH

The position which the Tonalamatl holds in the solar year has for a long time been a matter of doubt. Whether the beginning of the Tonalamatl was coincident with that of the solar year, whether the year 1 Tochtli began with the day 1 Tochtli and was intimately connected with the Tonalamatl which began with 1 Cipactli, or whether the Tonalamatl was really the kernel of the year and like the kernel of a nut occupied its center with fifty-two days preceding it and fifty-three days following it, no one as yet has been able to decide. But the publication of the *Codex Borbonicus*, recently issued by Ernest Leroux at the expense of the Duc de Loubat, gives Americanists an opportunity of studying in the original colors a unique specimen of the Tonalamatl, and offers strong evidence not only of the place of the Tonalamatl in the solar year, but of the real value of the "Acompañados de la Noche"—the Lords of the Night.

Dr Hamy, in his admirable commentary, tells us that this manuscript has been in the library of the Palais Bourbon for over seventy years, but that its origin is unknown. This is unfortunate, since, if its authority is beyond question, we shall be obliged to change in some respects our ideas about the Tonalamatl and the Lords of the Night.

The Tonalamatl of the *Codex Borbonicus* wants its first two pages containing the first two trecenas. The other pages, containing the Tonalamatl, are in a very admirable state of preservation, the colors being vivid and the designs in most cases clear and uninjured. Each page is large, being nearly a square of fifteen inches on a side. The left-hand upper compartment contains

a square of about ten inches on a side and is given up to the representation of a god or gods or of ceremonies with their various adjuncts and appendages. The lower part of the page is divided into small compartments, placed in two horizontal rows of seven each, while the right-hand side of the page is divided into similar compartments placed in two perpendicular rows of six each. The lower of the horizontal rows and the left-hand row of the perpendicular rows contain the thirteen days of the trecena, each with its appropriate numeral and the accompanying Lord of the Night, while the upper horizontal row and the right-hand perpendicular row contain birds and figures, which have not as yet been thoroughly explained, though some of the figures are the same as those of the Lords of the Night.

So far the Tonalamatl does not differ in any especial manner from other Tonalamatls, notably from that of the Aubin collection, but the fact that this Tonalamatl is followed by two pages on which is shown the full cycle of fifty-two years, or a calendar round, is the important point. On these two pages (numbers 21 and 22 in the Loubat reproduction), the center of each is occupied by a picture, and around these pictures are fifty-two compartments (twenty-six on each page) containing what have been called the initial days of the years in a cycle of fifty-two years. These days, if not initial, at least gave the names to the years. Thus at the left-hand lower corner of page 21 the first year is denoted by 1 Tochtli accompanied by a Lord of the Night; at the right is 2 Acatl with its accompanying Lord of the Night, and so on in a sinistral circuit about the central picture the years succeed each other until we reach the twenty-sixth year, 13 Acatl. The remaining years follow on page 22 in the same order, beginning with 1 Tecpatl in the left-hand lower corner and ending with 13 Calli, and in each compartment is the accompanying Lord of the Night. It is these Lords of the Night with which we have especially to deal. These Lords, as given by Gallatin and Léon y Gama, run in the following order:

Xiuhtecuhtli tletl, or tetl,	Lord of the year, fire,
Tecpatl,	flint,
Xochitl,	flower,
Centeotl,	Goddess of maize,
Miquiztli,	death,
Atl,	water, Goddess Chalchihuitlicue,
Tlazolteotl,	Goddess of love,
Tepeyollotli,	Deity, who lived in the mountains,
Quiahuitl,	rain, Tlaloc.

The first year on page 21 of the Codex Borbonicus is, as has been stated, 1 Tochtli, accompanied by Miquiztli, the fifth Lord. As there are 365 days in the year, a number divisible by 9 with a remainder of 5, we should expect to find that the Lord accompanying the next year, 2 Acatl, would be the first Lord, Xiuhtecuhtli ($5 + 5 = 10 - 9 = 1$); but so far from this being the case, it is the third Lord, Xochitl. This shows that the Lords of the Night do not run on from one year to another in regular order, but that there is some irregularity in the sequence. Of what does this irregularity consist? Let us see what Lords accompany each year. By referring to Table 1, we see that the years are accompanied by the Lords in the following order:

- 1 Tochtli by the fifth Lord, Miquiztli.
- 2 Acatl by the third Lord, Xochitl.
- 3 Tecpatl by the ninth Lord, Quiahuitl Tlaloc, etc.

The distances between these Lords (not counting in each case the one at the beginning, and counting the last one) run throughout the cycle thus: 7, 6; 7, 6, 6; 7, 6; 7, 6, 6, etc., excepting in one case where the distances run 7, 6; 7, 6; 7, 6, 6.

How can this apparent irregularity be accounted for? Very simply. On referring to the Tonalamatl, we see that on the beginning page, the third trecena begins with 1 Maçatl with the ninth Lord, Quiahuitl. The first trecena would then necessarily begin with 1 Cipactli with the first Lord, Xiuhtecuhtli. The last day of the twentieth trecena is 13 Xochitl with the eighth Lord, Tepeyollotli. This must necessarily be so, for as there are

$20 \times 13 = 260$ days in the Tonalamatl, and as $260 \div 9 = 28$ with a remainder of 8, the eighth Lord would accompany the last day. After this a new Tonalamatl begins with 1 Cipactli. Is this first day of the new Tonalamatl accompanied by the ninth Lord, Quiahuitl, or does the new Tonalamatl begin with the first Lord as did the old one, thus neglecting the ninth Lord and leaving him out of the count?

Léon y Gama¹ says: "Moreover, as the companions were only nine, and the days of this second calendar 260, they could not complete the period and one was left over, which was Quiahuitl, which in the new count, which was framed to regulate the solar count, came now as a companion to Cipactli, which in the beginning of the year had had Tetl for its companion, and thus though there were some of the same symbols and numerical characters of the days, which were repeated, the companions, which went with them in the last five months of the common year, were different."

Boturini² says that the nine Companions of the Night did not enter the five intercalary days of the year, and gives as a possible reason for this that otherwise the same Lord of the Night would not accompany the first day of the following year.

Gallatin³ says: "As the number 'nine' is not a factor of 260, the first day of the thirteenth [he means the fourteenth] month, which is the 261st day of the year, was distinguished from it by the sign of nine, and in the same manner every day of the five last months was distinguished by a sign of this series differing from the sign of the same series, annexed to the days of the five first months, which have the same name and numerical character."

The first and last of these writers can never have heard of the Codex Borbonicus, or, having seen it, they have denied its authority. Let us take up the numeration from the beginning:

¹ *Las Dos Piedras*, Mexico, 1832, p. 33.

² *Idea de una Nueva Historia*, etc., Madrid, 1746, p. 57.

³ *Transactions of the American Ethnological Society*, vol. 1, p. 62.

The first year, 1 Tochtli, is accompanied by the fifth Lord, Miquiztli. On referring to the Tonalamatl, which precedes, we find that 1 Tochtli with the fifth Lord, Miquiztli, is found on the day beginning the twentieth trecena, or, in other words, is the 248th day of the Tonalamatl, which comes to an end 12 days thereafter with 13 Calli. If the 248th day of the Tonalamatl is the first day of the year (considering 1 Tochtli for the present as the true initial day of the year), then the 260th day of the Tonalamatl is the 13th day of the year, and the 261st day, or the first day of the next Tonalamatl, is the fourteenth day of the year. The 260th day of this second Tonalamatl will then be the 273d day of the same year, and the 261st day, or the first day of the third Tonalamatl, will then be the 274th day of the same year. In other words, two Tonalamatls will have been finished during the year.

If now the Lords had run on through the Tonalamatl and through the year in continuous sequence, we should find that the first day of the second Tonalamatl, or the fourteenth day of the year, would have been accompanied by the ninth Lord, Quiahuitl, and the first day of the third Tonalamatl, or the 274th day of the year, by the eighth Lord, Tepeyollotli; while the 92d day of the third Tonalamatl, or the 365th day of the year, would have been accompanied by the ninth Lord, Quiahuitl, and the 93d day of the third Tonalamatl, or the 366th day of the year (= 1st day of the succeeding year), would be accompanied by the first Lord, Xiuhtecuhtli. As a matter of fact the Lord is the third in order, Xochitl.

This would seem to prove that Léon y Gama and Gallatin are both wrong, and that instead of counting the Lords in continuous order from one Tonalamatl to the other, the Indians began again with each new Tonalamatl and let the day 1 Cipactli be accompanied in each case by the first Lord, Xiuhtecuhtli. In other words, at the end of each Tonalamatl they neglected the Lord which was left over and began again with the first Lord. If this

were done, whenever one Tonalamatl came to an end within a solar year, we should gain one in the series of Lords, and when two Tonalamatls came to an end within a solar year, we should gain two in the series of Lords. This is the case in the Codex Borbonicus, as is shown in Table I, which gives the names of the years, the number of Tonalamatls which came to an end in each year, and the name of the Lord which would occur if the count of the Lords was made in a continuous sequence, together with the name and number of the Lord at the beginning of each year, as given on pages 21 and 22 of the Codex Borbonicus.

A proof of this can be shown by a slight calculation. If we take any year in the first column, add up the number of Tonalamatls in the second column down to and including the number opposite the year, then add this sum to the number of the Lord in the third column, and subtract as many times 9 as are contained in this final sum, the result will be the number of the Lord in the fourth column. Thus, take the year 1 Acatl-2 Tecpatl; add $2 + 1 + 2 + 1 + 1 + 2 + 1 + 2 + 1 + 1 + 2 + 1 + 2 + 1 = 20 + 3$ (the number of the Lord in the third column) $= 23$; deduct 8 (2×9), and the result is 5 (the number of the Lord in the fourth column).

If we recognize this Codex as correct, the result must be that the Lords of the Night did not have the important place which they have been supposed to hold. If they had been used in a continuous sequence, instead of beginning the series anew with each new Tonalamatl, it would have been possible to differentiate the days of nine Tonalamatls and to tell in which of the nine Tonalamatls any day occurred, thus covering a space of $9 \times 260 = 2340$ days. Again, in like manner it would have been possible to differentiate the days of nine calendar rounds of fifty-two years, or $9 \times 18,980 = 170,820$ days; for, if a calendar round began with 1 Tochtli accompanied by the fifth Lord, Miquiztli, the next calendar round would then begin with 1 Tochtli accompanied by the fourth Lord, Centeotl, and the third calendar round would begin

with 1 Tochtli accompanied by the third Lord, Xochitl, and so on.

But if the surplus Lord is neglected at the end of each Tonalamatl, each Tonalamatl will begin with the same Lord, Xiuhtecuhtli, and each calendar round will begin with the fifth Lord, Miquiztli, and the only result of the presence of the Lords will be the differentiation of the days which belong to the parts of two different Tonalamatls which occur in one solar year; and even this will only be possible if, as Léon y Gama states,¹ the Indians did not think it necessary to give the name of the Lord accompanying the first twenty trecenas in a year, but only those accompanying the last eight trecenas.

But we have no right to impute to the Mexicans and Mayas a larger use of their calendar system than they can be proved to have possessed, and I know of no proof in the Mexican picture-writings that the Indians used the Tonalamatls and the Lords for differentiating the days in any longer period of time than a solar year. Is there a single case of a Xiuhmolpilli symbol being accompanied by the sign of a Lord, or indeed is there any case where the day symbol is so accompanied except in the Tonalamatls themselves? Is there anything to show that the Lords, besides their work of distinguishing the days of a solar year, which occupied the last eight trecenas, from those occupying the first twenty trecenas, did more than to play a part in the divinations to which the Tonalamatl was devoted?

The only escape, as it seems to me, from this deduction is that the Codex Borbonicus was written by an ignorant person, or by a fraudulent writer. The beauty of the drawings and the care which was evidently taken in preparing them are a refutation of the first suggestion; and the fact that it has been in the library of the Corps Legislatif for seventy years would seem to do away with the possibility of fraud, as in the early part of this century so little interest was taken in American archeology and ethnology

¹ *Las Dos Piedras*, p. 33.

that there was no inducement to spend time and money in fraudulent reproductions.

From this examination I am led to believe that the views expressed by others, namely, that the Tonalamatls were not continuous from one year to another, and were distinct periods occupying some particular part of the solar year, are erroneous. If this were so, and if but one Tonalamatl occurred in each year, we should expect to find the Lords of the Night either confined to the Tonalamatls and not accompanying the initial days of the year, or else following one another throughout the year continuously or with a regular interval. But we actually find these Lords repeated with irregular intervals, and these intervals are regulated by the number of Tonalamatls ending in each solar year. Apparently, therefore, the Tonalamatls succeeded each other, continuously lapping over from one year to the other, while the Lords of the Night accompanied the Tonalamatls and lost one of their number with the ending of each Tonalamatl.

Moreover, the first day of the Tonalamatl coincided, in turn, during the course of 73 Tonalamatls or 52 years, with every day of the solar year which ended with a 3 or an 8, and that day could never coincide with the first day of the solar year unless the year itself began with Cipactli, for I know of no Tonalamatl which begins with any other day than Cipactli. (See Table II.)

NOTE.—We find the Lords of the Night bearing as a body the same name as one of the months of the Mexican year, namely Quecholli. It would, therefore, seem that the Lords and the month had some connection. This connection is apparent when we consider that Léon y Gama states that the names of the Lords were not given to the days of the first twenty trecenas (which is the same as the first thirteen months or two hundred and sixty days), but began to be attached to the days of the next trecena or fourteenth month. If this is the case, it would be very natural that the month should take its name from the Lords, or the Lords from the month, and this fact would tend to prove that Quecholli was in reality the fourteenth month, as indeed has been believed by students of the subject with some notable exceptions.

TABLE I

<i>Year</i>	<i>Number of Tonalamatis ending in each solar Year.</i>	<i>Number and name of the Lord of first day of year in case the count were in continuous sequence.</i>	<i>Number and name of the Lord actually found on pages 21 and 22 of Codex Borbonicus.</i>
1 Tochtli		1 Xiuhtecuhlli tetl	5 Miquiztli
1 Tochtli-2 Acatl	2	6 Atl	3 Xochitl
2 Acatl-3 Tecpatl	1	2 Tecpatl	9 Quiahuitl
3 Tecpatl-4 Calli	2	7 Tlazolteotl	7 Tlazolteotl
4 Calli-5 Tochtli	1	3 Xochitl	4 Centeotl
5 Tochtli-6 Acatl	1	8 Tepeyollotli	1 Xiuhtecuhlli tetl
6 Acatl-7 Tecpatl	2	4 Centeotl	8 Tepeyollotli
7 Tecpatl-8 Calli	1	9 Quiahuitl	5 Miquiztli
8 Calli-9 Tochtli	2	5 Miquiztli	3 Xochitl
9 Tochtli-10 Acatl	1	1 Xiuhtecuhlli tetl	9 Quiahuitl
10 Acatl-11 Tecpatl	1	6 Atl	6 Atl
11 Tecpatl-12 Calli	2	2 Tecpatl	4 Centeotl
12 Calli-13 Tochtli	1	7 Tlazolteotl	1 Xiuhtecuhlli tetl
13 Tochtli-1 Acatl	2	3 Xochitl	8 Tepeyollotli
1 Acatl-2 Tecpatl	1	8 Tepeyollotli	5 Miquiztli
2 Tecpatl-3 Calli	2	4 Centeotl	3 Xochitl
3 Calli-4 Tochtli	1	9 Quiahuitl	9 Quiahuitl
4 Tochtli-5 Acatl	1	5 Miquiztli	6 Atl
5 Acatl-6 Tecpatl	2	1 Xiuhtecuhlli tetl	4 Centeotl
6 Tecpatl-7 Calli	1	6 Atl	1 Xiuhtecuhlli tetl
7 Calli-8 Tochtli	2	2 Tecpatl	8 Tepeyollotli
8 Tochtli-9 Acatl	1	7 Tlazolteotl	5 Miquiztli
9 Acatl-10 Tecpatl	1	3 Xochitl	2 Tecpatl
10 Tecpatl-11 Calli	2	8 Tepeyollotli	9 Quiahuitl
11 Calli-12 Tochtli	1	4 Centeotl	6 Atl
12 Tochtli-13 Acatl	2	9 Quiahuitl	4 Centeotl
13 Acatl-1 Tecpatl	1	5 Miquiztli	1 Xiuhtecuhlli tetl
1 Tecpatl-2 Calli	1	1 Xiuhtecuhlli tetl	7 Tlazolteotl
2 Calli-3 Tochtli	2	6 Atl	5 Miquiztli
3 Tochtli-4 Acatl	1	2 Tecpatl	2 Tecpatl
4 Acatl-5 Tecpatl	2	7 Tlazolteotl	9 Quiahuitl
5 Tecpatl-6 Calli	1	3 Xochitl	6 Atl
6 Calli-7 Tochtli	1	8 Tepeyollotli	3 Xochitl
7 Tochtli-8 Acatl	2	4 Centeotl	1 Xiuhtecuhlli tetl
8 Acatl-9 Tecpatl	1	9 Quiahuitl	7 Tlazolteotl
9 Tecpatl-10 Calli	2	5 Miquiztli	5 Miquiztli
10 Calli-11 Tochtli	1	1 Xiuhtecuhlli tetl	2 Tecpatl
11 Tochtli-12 Acatl	1	6 Atl	8 Tepeyollotli
12 Acatl-13 Tecpatl	2	2 Tecpatl	6 Atl
13 Tecpatl-1 Calli	1	7 Tlazolteotl	3 Xochitl
1 Calli-2 Tochtli	2	3 Xochitl	1 Xiuhtecuhlli tetl
2 Tochtli-3 Acatl	1	8 Tepeyollotli	7 Tlazolteotl
3 Acatl-4 Tecpatl	1	4 Centeotl	4 Centeotl
4 Tecpatl-5 Calli	2	9 Quiahuitl	2 Tecpatl
5 Calli-6 Tochtli	1	5 Miquiztli	8 Tepeyollotli
6 Tochtli-7 Acatl	2	1 Xiuhtecuhlli tetl	6 Atl
7 Acatl-8 Tecpatl	1	6 Atl	3 Xochitl
8 Tecpatl-9 Calli	1	2 Tecpatl	9 Quiahuitl
9 Calli-10 Tochtli	2	7 Tlazolteotl	7 Tlazolteotl
10 Tochtli-11 Acatl	1	3 Xochitl	4 Centeotl
11 Acatl-12 Tecpatl	2	8 Tepeyollotli	2 Tecpatl
12 Tecpatl-13 Calli	1	4 Centeotl	8 Tepeyollotli
13 Calli-1 Tochtli	1		5 Miquiztli.

TABLE II

<i>Year</i>	<i>Tonalamatl begins on the—</i>	<i>Year</i>	<i>Tonalamatl begins on the—</i>
1 Tochtli	13th day of year	1 Tecpatl	143d day of year
2 Acatl	273d " " "	2 Calli	38th " " "
3 Tecpatl	168th " " "	3 Tochtli	308th " " "
4 Calli	63d " " "	4 Acatl	193d " " "
5 Tochtli	323d " " "	5 Tecpatl	88th " " "
6 Acatl	218th " " "	6 Calli	348th " " "
7 Tecpatl	113th " " "	7 Tochtli	243d " " "
8 Calli	8th " " "	8 Tecpatl	138th " " "
9 Acatl	268th " " "	9 Calli	33d " " "
10 Tochtli	163d " " "	10 Tecpatl	203d " " "
11 Tecpatl	58th " " "	11 Tochtli	168th " " "
12 Calli	318th " " "	12 Acatl	83d " " "
13 Tecpatl	213th " " "	13 Tecpatl	343d " " "
1 Acatl	108th " " "	1 Calli	238th " " "
2 Tecpatl	3d " " "	2 Tochtli	133d " " "
3 Calli	263d " " "	3 Acatl	28th " " "
4 Tochtli	158th " " "	4 Tecpatl	288th " " "
5 Acatl	53d " " "	5 Calli	183d " " "
6 Tecpatl	313th " " "	6 Tochtli	78th " " "
7 Calli	208th " " "	7 Tecpatl	338th " " "
8 Tecpatl	103d " " "	8 Calli	233d " " "
9 Calli	363d " " "	9 Acatl	128th " " "
10 Tochtli	258th " " "	10 Tecpatl	23d " " "
11 Acatl	153d " " "	11 Calli	283d " " "
12 Tecpatl	48th " " "	12 Tochtli	178th " " "
13 Calli	308th " " "	13 Tecpatl	73d " " "
1 Acatl	203d " " "	1 Calli	333d " " "
2 Tecpatl	98th " " "	2 Tochtli	228th " " "
3 Calli	358th " " "	3 Acatl	123d " " "
4 Tochtli	253d " " "	4 Tecpatl	18th " " "
5 Acatl	148th " " "	5 Calli	278th " " "
6 Tecpatl	43d " " "	6 Tochtli	173d " " "
7 Calli	303d " " "	7 Acatl	68th " " "
8 Tecpatl	198th " " "	8 Tecpatl	328th " " "
9 Calli	93d " " "	9 Calli	223d " " "
10 Tochtli	353d " " "	10 Tecpatl	118th " " "
11 Acatl	248th " " "	11 Calli	13th " " "
		12 Tecpatl	
		13 Calli	
		1 Tochtli	

BOOK REVIEWS

Hawaiian Feather Work. By WILLIAM T. BRIGHAM. Memoirs of the Bernice Pauahi Bishop Museum of Polynesian Ethnology and Natural History, vol. 1, No. 1. Honolulu: 1899. 4°, 81 + ii pp., 15 pl., 115 figs.

Scientific literature has recently been enriched by the issue of a handsome monograph on Hawaiian feather-work, forming the first part of volume 1 of the Memoirs of the Bernice Pauahi Bishop Museum in Honolulu. The author, William T. Brigham, Director of the Museum, is without doubt the best qualified person in the world for the task undertaken, not only because of his long residence in Hawaii, but because of his wide knowledge of the anthropology of the Pacific. The material is assembled in excellent manner, the style is simple and direct, and the numerous illustrations are all that could be desired. Ethnologists have thus another interesting group of facts available for use in the great work of building up the history of the race.

The use of feathers in various branches of art was very general over the American continent, as well as in the islands of the Pacific, when Europeans first appeared; but the fragile products were not lasting and in the main they have disappeared from view, while, through lack of foresight of the early explorers, only meager records of their character were made. Although the art itself was practically extinct on these far-away islands fifty years ago, enough has survived to serve as a key to the feather-worker's art. Through the efforts of Mr Brigham this material has been brought together in such a way as to furnish a satisfactory idea of the scope of the art and to give some hints as to its significance and symbolism.

The principal articles described are as follows: *Kahilis* or plume standards, *leis* or feather strands, *ahuula* or capes and cloaks, *mahiolo* or helmets, *kukailimoku* or images, and a model of an *anuu*, the house of the temple oracle.

Birds Furnishing the Feathers.—There are but few birds in the Hawaiian islands, and the feathers used in the various native fabrications were derived chiefly from a few species, the three principal ones being the *iiwi* (*Vestiaria coccinea*), a small bird which furnishes vermilion plumage; the *oo* (*Acrulocercus nobilis*), yielding black and yellow feathers, and the *mamo* (*Drepanis pacifica*), yielding orange and black feathers.

The capture of the birds was a very important and difficult matter and engaged the attention of professional hunters. The smaller varieties were captured by means of bird-lime or nets, while others were shot, and some species which furnished a few feathers each were caught, plucked, and set free. These feathers were carefully tied in bunches and formed an important feature in the local trade. It is stated that they were used to some extent as currency, as were shells in other regions.

Kahilis.—The *kahili* in its typical development consists of a long pole or staff, to the upper end of which is attached the *hulu* or cluster of feathers. The latter is generally somewhat cylindrical in shape, but with considerable variation in details of form; the complete object has a general resemblance to a stalk of cat-tail flag, or the swab used in cleaning the bore of a cannon. The feather cylinder is in cases as much as two feet in diameter and six feet or more in length, while the staff often reaches the length of twenty feet or more; the majority, however, are small and can readily be held aloft in one hand. In early times they were used as standards or banners and served as symbols of rank. In Mr Brigham's opinion the prototype of the *kahili* was the leaf of the *ki* (*Cordyline terminalis*) used as a fly-flap. This plant was a symbol of peace, and it is suggested that the *kahili* inherited this significance and gradually developed into a symbol of wider application.

Although in later years the use of the *kahili* became general and thus lost much of its sacredness, the great plumes continued to be used on ceremonial occasions by royal personages down to the close of the monarchy. Mr Brigham believes that "before white influence was felt, no thought was given to fitness of color to particular use or occasion, and it was only by foreign teaching that reds and yellows were reserved for coronations or general state functions, while black and the sombre colors were appropriated to funerals" (page 17).

The remarkable effect of these plume banners in a royal funeral procession is graphically described by the Rev. C. S. Richards, missionary on the islands in 1822: "There is something approaching the sublime in the lofty noddings of the *kahilis* of state as they tower far above the heads of the group whose distinction they proclaim: something conveying to the mind impressions of greater majesty than the gleamings of the most splendid banners I ever saw unfurled" (page 20).

Leis.—This ornament is formed by attaching feathers to a cord in a symmetric manner, forming fluffy, cylindrical strands. It is used as are strands of flowers to wreath around the neck, head, and shoulders, and is a most pleasing and effective personal embellishment. Generally the smaller feathers were employed, so that the strands were slender

and light, the length varying from 15 to 30 inches. The true feather *leis* are generally of uniform, cylindrical section and are either monochromatic or made up of alternating bands or spirals of mixed colors. In some cases the *leis* have longer feathers inserted at regular intervals, giving a considerable diversity of form.

These strands are not difficult to make, but older examples made of *mamo* or *pe* are held at high prices. Mr Brigham mentions one specimen valued at eight hundred and another at one thousand dollars. Upward of forty of large size are preserved in the Bishop Museum, and other museums have a limited number of examples.

Mahiole or Helmets.—The ancient helmet of the Hawaiians, worn on ceremonial occasions and in war, and primarily a mark of rank, was a work of art and a thing of beauty. It was made of richly colored feathers woven into a net of *olond* fiber which in turn was stretched over a skull-cap of neatly plaited wicker. In appearance it strongly suggests the ancient Greek helmet, but it originated no doubt with the Pacific islanders. Mr Brigham suggests that the crest of hair, worn by primitive peoples, extending from the forehead to the back of the neck and made to stand in high relief by proper clipping and dressing, was the prototype. The helmet crest rises in a strong, graceful curve from behind and terminates in a more or less prolonged point or beak in front. In cases it is perforated, the crest-rim being held in place by spoke-like stems rising from the crown. It is of effective and noble shape and when elaborated in the plumage of tropical birds must have rivaled in beauty the richest helmets of any people or period. The author enumerates forty-one helmets, preserved in various places, but several of these have been totally denuded of their plumage by moths or decay, while others consist merely of the wicker foundation over which the feather-decorated cover was drawn. The helmet of King Kaumauli, who died in 1822, done in colors as a frontispiece to the memoir, is a superb and typical example.

Ahuula.—The capes and cloaks are the most varied and beautiful of the Hawaiian feather products. Mr Brigham describes and illustrates the preparation of *olond* fiber and the making of the cord used in the foundation fabric of these garments as well as the manner in which it is netted. It was the common practice to make up the foundation fabric by sewing together many small pieces of net or even of other cloth. To these the feathers were attached in a manner known to nearly all feather-workers; the quill end of the feather was passed around a strand of the fabric and tied with fine thread, and the colors and sizes were so arranged as to produce the desired pattern and effect.

In shape the cloaks and capes are similar. The short upper margin is curved more or less to fit the neck, and the body of the garment widens rapidly as it descends, sometimes with lateral variations of outline, and terminates in a long, curved lower margin. Some capes are quite small, but others are of generous proportions and, indeed, may be said to pass into the cloak which, in its greatest development, measures 60 inches in length and has a border or peripheral measurement of 136 inches. The fastening was a firm braided neck-band continuing in cords or braids long enough to tie in front.

The decorations are generally in rather simple patterns, such as crescents, crescent-like figures, triangles, diamonds, circles, and bands, and are without known significance. The prevailing ground tones are yellow and the pronounced figures are in red, black, and green. The amount of work necessary in the making of one of these large cloaks was enormous, and the time consumed was not always within the limits of a lifetime. They were worn by men; in battle they were a warlike decoration indicating rank, and as trophies of victory were displayed on public occasions, such as funerals, coronations, etc. Generally today they are considered as great rarities, and it is not unusual to hear of offers to sell at fabulous prices. The sale of one specimen at twelve hundred dollars is mentioned by Mr Brigham. The list given includes one hundred examples, thirty-three of which are cloaks and the remainder capes.

Kukailimoku. — Perhaps the most extraordinary use to which feathers have been put in art was the making of images of deities. *Kukailimoku* was a war deity and the Hawaiians sought to honor him by constructing his image in the most costly manner known to them. These images represent the head and neck only, and though made of the most beautifully colored feathers, portray a grotesque and forbidding visage which agrees, however, in general character with the masks of other Pacific peoples. "The structure of these peculiar images is simple. A wicker work, neatly made of the long and very durable aerial roots of the *ie-ie* (*Freyinetia arborea*) in such a way as to show the general form and features, is strongly braced by hoops or ribs within, and then covered with a tightly fitting net of *oloná* to which feathers were attached, as in the feather cloaks which will be described later. Red *iiwi* was the basis to which yellow and black *oo* was added for embellishment or to demark features. In some cases human hair crowned the head, in others the *mahiolo* or crest. The eyes were of pearl shell, and in those of the Bishop Museum are attached in two ways by carved knobs of dark wood representing pupils. . . . The teeth were those of dogs

saved from the priestly feasts. Ears were represented by small patches of black or yellow, sometimes by both colors united. These gods were carried in battle on kauila poles, most of them having no other sufficient support, and being also too small to be placed over the head of a priest, as has been suggested" (page 35). Naturally, few of these objects have been preserved, and only nine are enumerated in Mr Brigham's list.

Ann. — Mr Brigham illustrates a very interesting relic of Captain Cook's visit to the island,—a model of the obelisk-like structure from which the priests of the Hawaiian temple delivered their oracular communications. These structures were enclosed within the temple, and the example described by Cook was about four feet square at the base and twenty feet high. They were made usually of wicker and covered with kapa cloth and had a small door for the admission of the priest. The model, which is 20½ inches high and elaborately finished in feathers, was brought away by the Cook expedition and is now preserved in the Hof Museum at Vienna.

The publication of this valuable memoir proclaims the wisdom of the founder of the Bishop Museum, who by his opportune liberality made the preservation of Hawaiian historic treasures possible; and by the same token the world will know that the present management of the institution appreciates the important fact that the benefits of a great public museum should not be confined to a small community in the Pacific and the visitors who happen that way, but should extend to the whole civilized world.

WILLIAM HENRY HOLMES.

Pipes and Smoking Customs of the American Aborigines, Based on Material in the U. S. National Museum. By JOSEPH D. MCGUIRE. (Report of the U. S. National Museum for 1897.) Washington: 1899. 8°, pages 351-645, 5 plates, 239 figures.

A work on the pipes and smoking customs of the aborigines of North America has long been needed by students of aboriginal art and custom. The monograph by Mr McGuire has therefore been read with much interest and not without profit. The objects with which it deals have engaged my attention more or less for the last fifteen years, and since my report on *Mound Explorations* (Twelfth Annual Report of the Bureau of Ethnology) was submitted for publication, I have hoped that some one would take up the subject and prepare a memoir on it. More than once, if my memory serves me correctly, the question as to who would do the work was the subject of discussion between myself and others interested. I was pleased, therefore, at the appearance of

Mr McGuire's paper, especially as I know from personal acquaintance with the author that it is his custom, when he takes up a subject, to dig, if possible, to the root and, after due consideration of the opinions of other investigators, to draw and to state fearlessly his own conclusions.

Although this brief review will be devoted chiefly to a discussion of points in regard to which I differ with the author, I take pleasure in stating that his work is timely, and on the whole a valuable, useful, and much needed contribution to the literature relating to aboriginal art and custom. It brings together in compact form the data relating to the subject of which it treats, which could previously be obtained only by search through many volumes and the examination of numerous collections, for the author, notwithstanding the statement in the title of his work, has evidently searched a number of other collections than those of the National Museum, though the latter have been taken as a basis. To a large extent the memoir will relieve students of this laborious research, and any work which does this is always valuable even though all the author's conclusions may not be accepted.

The chief criticism to be offered is directed to what may be deemed a lack of system in classification, and to the author's conclusion as to the very modern origin of some specimens and even types. His classification of pipes appears to be as follows :

Tubular pipes.	Pipe bowls without stems.
Heavy animal and bird pipes.	Monitor pipes.
Rectangular pipes.	Micmac pipes.
Disk pipes.	Iroquoian pipes.
Bird pipes.	Mound pipes.
Double conoidal pipes.	Idol pipes.
Great pipes.	Catlinite and Siouan pipes.
Pipes of the Northwest coast.	Miscellaneous Pueblo pipes.
Delaware types.	Indeterminate types.
Southern types.	Atlantic coast pipes.
Some unique types.	Southern mound pipes.

This classification, if intended to be in any sense scientific, is in my opinion defective.

I am fully aware that a satisfactory classification of the antiquities of any extensive section has not yet been accomplished. It of course would have been a difficult task for Mr McGuire to make an entirely satisfactory arrangement where the forms are so varied, and at the same time to have this correspond in some degree with the geographical

distribution of the types. Yet it seems that a better and more systematic classification than that adopted might have been made. The best results in this direction, so far as my observations extend, are obtained by the method followed by Professor Holmes in dealing with pottery. He first strips, as it were,—that is, omits from consideration,—the ornamentation and figure forms so far as possible, leaving the simple basal forms; these he arranges in comprehensive classes or groups by certain leading or more essential characters, without regard to geographical distribution or ethnic relation. In the subdivision of these primary classes, the more restricted, and, if found practicable, the geographical distribution are taken into consideration. Some such arrangement as this would doubtless have been more scientific, more systematic, and far preferable to that adopted by Mr McGuire. Even an arbitrary division, first into primary groups by leading characters, would have been better than that followed, and would have avoided confusion.

Such titles as "Mound pipes," "Great pipes," "Southern mound pipes," etc., are certainly without any typical or real classificatory significance. The term "Mound pipes," if used with its ordinary meaning, includes a number of types and more than one of Mr McGuire's divisions or classes, hence is confusing and inappropriate; it might stand in a broad sense in contrast with "Surface pipes," or possibly "Modern pipes," but not as referring to a particular type. His application of the term "Monitor pipe" is different from that which I have understood it to be, or at least includes, according to the examples given, types different from that to which I have understood it to be applied. This, however, would be of minor importance if the author were consistent in his arrangement. Comparing his figures 89 to 99, one with another, it would seem that there are included here two, if not three, different types. If we strip his figures 94 (among the monitor types), 128, and 130 (among the mound types) of their ornaments, we have the simple platform or monitor type, the slight curve in the base of the latter being insufficient to constitute a type. The pipes represented by figures 92, 93, and 95 are, at least apparently, but modifications of the platform or monitor type, and such forms are so classed by Thruston. That the term "Mound pipe" has been used, though very indefinitely, to indicate a class or type, is true, but such inappropriate terms should be dropped unless used in the broad sense of contrasting with "Surface pipes," etc.

Another point in which I must differ with the author, if I understand him correctly, is the recent date to which he is disposed to relegate certain types. For fear the inference I draw may not be considered

exactly a fair one, I quote in full his statement made on pages 632-633:

"The typical, elaborate, and artistic curved-base mound pipes, found to be contemporaneous with copper implements, are drilled by means of tubular and solid drills, almost necessarily made of metal. In certain instances the shapes of bowl cavities are of an irregular form, indicative of the use of a loose drill head; which supposition, if correct, would suggest the use of either a pump or strap drill, probably the former, either of which implements appears to have been unknown to the natives prior to the advent of the whites. The polishing of this type of pipe is so perfect as to raise a suspicion of white influences. The common observance on pipes of this type of marks which seem to be those of the file suggests white man's tools in fashioning them. The fine lines cut on many of these pipes would indicate the possible use of steel tools; inlaid eyes suggest modern methods. Carving in the round as perfectly as is done in pipes of this type also implies modern influences and the presence of the white man, as do objects of copper covered with silver found in contact with these pipes. Besides this, the knowledge of the existence of the elephant and the finding in the mounds articles of undoubted European origin are all suggestive of the comparative modern date of pipes of the curved-base mound type. It does not of necessity follow that these pipes were of foreign manufacture, but probably they were the handiwork of fur traders and hunters catering to native trade demands. The figures on these pipes are doubtless of totemic significance, and, with few exceptions, face the smoker; and where an exception is noted, it is commonly observed that the stems on the front end have been broken. The figures beyond, being of men, beasts, birds, and reptiles, are seldom of determinable species. The finding of pipes of this type made of catlinite is indicative of modern influences, though by no means proof of it. The area of distribution of this type conforms to the route of the early French voyageur and of the missionary."

The same view is also expressed in that section of the paper devoted to "Mound pipes" where the author refers to metal implements used in carving them. That some of the classes or types of pipes are post-Columbian cannot be doubted, and I am inclined to agree with Mr McGuire that many of those found in the Atlantic coast region, some of them in mounds and so-called ancient graves, bear the impress of European influence, and are in some instances imitations of European forms, as I believe to be true in regard to some specimens of southern mound pottery; but I am not prepared to go quite so far in this

direction as the author seems disposed to do in the above quotation and elsewhere in his paper.

It is inferred from this language that he believes the pipes he designates "Mound pipes" did not come into use until the French began to make their way into the northwest. He bases this opinion chiefly on three items: the supposed file marks on many specimens, the high polish of others, and the fact that the localities where specimens of this type have been found are along the lines of early French travel—that is, in central and southern Ohio, northwestern Illinois, and eastern Iowa.

If this theory be correct, and these pipes were manufactured by the Indians, is it not a little strange that, with all the digging that has been done in Ohio and eastern Iowa, not a single file nor, so far as I am aware, a single steel or iron drill has been found? In the mounds of western North Carolina, where types apparently copied after European forms have been obtained, parts of iron or steel implements have been discovered. If, however, these "Mound pipes" were made by white traders for barter with the Indians, as Mr McGuire suggests as possible, it is strange that these traders should have adopted a pattern previously unknown both to Europeans and Indians.

Although articles showing European contact have been found in two or three (or at most but very few) mounds of the sections from which the so-called "Mound pipes" have been obtained, the general and almost universal rule has been the other way, though pipes of this form have been found in many. If pipes of this form were made after intercourse between the Indians of these sections and the French began, then the mounds in which they have been found (for their presence is not attributable to intrusive burial) must have been built after such intercourse commenced. This being so, is it not remarkable that there should be in these mounds such a dearth of articles, aside from these pipes, showing contact with the whites?

There is, however, another objection to this theory, at least so far as pipes of this character found in Ohio mounds are concerned. It was not until the first half of the seventeenth century that the French began to work their way up the lakes, nor did they reach the interior of Ohio or traverse the Mississippi until the latter half of the same century. It follows as a necessary result of this theory that the mounds in which these pipes have been found were not built until after this movement of the French began, yet, as is generally admitted, Ohio, from about this date until the Shawnees and Delawares began to come into it about the commencement or in the early part of the following century,

was virtually without inhabitants, they having been driven out by the Iroquois. Who then were the builders of the Ohio mounds? Moreover, it is known from persons who visited the region of Chillicothe about or soon after the middle of the eighteenth century that these works were then looked upon as very ancient.

Taking these facts into consideration, I do not think that Mr McGuire's theory on this point is tenable. I am no advocate of the very great antiquity claimed for the mounds and other ancient works of Ohio, yet I believe most of them antedate the appearance of the whites in that region and are possibly pre-Columbian; and I believe also that the pipes designated "Mound pipes" by Mr McGuire are, both as to design and manufacture, to be attributed to the Indians.

Previous to reading Mr McGuire's memoir I was impressed with the idea that the tubular pipe was comparatively rare and intrusive in the mound region, but he shows that it is of much more frequent occurrence than I supposed. He is inclined to look upon it as the most ancient form of pipe among the aborigines of North America, and is probably correct in this opinion. This being admitted, it would be interesting to ascertain, if possible, the section in which it first came into use. My own impression is that this is to be found somewhere on the Pacific slope.

Other interesting questions are raised by the author in regard to the origin and distribution of certain types; these have an interesting bearing on the lines of aboriginal trade and travel, but they must be passed over without further notice here.

Notwithstanding the criticisms presented, which relate only to two points, we commend the work to students.

CYRUS THOMAS.

The Natural History of the Musical Bow. A Chapter in the Developmental History of Stringed Instruments of Music. By HENRY BALFOUR, M.A. (*Primitive Types*.) Oxford: Clarendon Press, 1899. 8°, 87 pp., 61 figs., map.

There are two ways of looking at human inventions, the one ethnographic, the other technographic. The ethnographer makes his home among tribesmen and tells the story of their industrial lives; the technographer pursues a single art over time and place until he knows it thoroughly. Mr Balfour (whose opportunities in the last regard are unparalleled, since he is curator of the Pitt-Rivers Museum at Oxford) has followed the latter in respect to the musical bow. The monograph here reviewed is devoted to the primitive forms only; a second part

will deal with the more complicated instruments that trace their origin to the lowly forms. But even in its primitive form there are three stages of elaboration: (1) The temporary conversion of the archer's bow into a musical instrument; (2) monochord instruments made for musical purposes only; (3) attachment of a gourd or other resonator more or less permanently to the bow.

The discussion proper is preceded by a delightful summary of oriental and classical legend on the subject. Of the archer's bow type the author finds examples among the Damara, Mandingo, and Kaffirs. Of the second or simple monochord instruments he goes to the west coast of Africa, to Zululand, and also among the Hottentots; a rude form is found in northern India and many in the Negroid Indo-Pacific area. The resonator class is found on the Kongo, in West Africa, and in the south; in fact one can scarcely escape from the sound of it south of the Soudan. Many varieties exist also in India, but Africa is the home of the single-string musical bow.

Balfour traces the African forms throughout the West Indies, middle America, and South America, wherever African slaves were taken by the Spaniards. Saville's modern Maya *hool* is traced to Africa, and in the figure in *Le Manuscrit du Cacique* "nothing of the nature of a musical bow is represented."

In Asia no musical bow occurs north of the Himalayas. The *pincka vina* of northern India is described as a survival in the midst of instruments of high class, its descendants, the intermediate forms, having dropped out. In hither and farther India, where the musical bow has a local perspective, the problem is more serious than that relating to America. No doubt the primitive musical bow is a survival here from an early time, and while we are guessing how Africa and India possess the same invention, we may turn the problem over to the keepers of a sunken continent or to the believers in the new doctrine that the most intricate devices in regions far apart "grow up" like Topsy. Mr Balfour believes in the common origin for the musical bow in India and Africa. The instrument has a wide distribution in Melanesia or the Negroid Indo-Pacific area. This is extremely interesting, as much so as that larger question how two woolly-haired peoples came to live, the one on the eastern, the other on the western side of the Indian ocean. No resonator is seen here, though it effloresces in southern Asia. Mr Balfour thinks that the two areas are one, the older forms having dropped out of the latter. In the brown Polynesian area the instrument would seem to be sporadic, and it does not occur in Micronesia at all.

The author invokes the coöperation of his brethren in order to make

a complete account of the structure and spread of musical bows. Meanwhile, we commend to all who read this brief notice to take this monograph as an example of how to study and write.

O. T. MASON.

The Bird-Stone Ceremonial. By WARREN KING MOOREHEAD. *Being an Account of some Singular Prehistoric Artifacts Found in the United States and Canada.* Saranac Lake, N. Y.: 1899. 4°, iv, 31 pp., 53 figs.

This brief paper is devoted almost entirely to the description and illustration of those singular artifacts known generally as "bird-stones" from their more or less avian form. From it we learn, first, that specimens of this type are very rarely found in mounds, only two cases being recorded; second, that they are of rare occurrence south of the Ohio river. If these statements are fully borne out by a more complete investigation, they become important in the study of the age, origin, and use of these singular articles. We say "more complete" because the paper bears evidence of haste, as it acknowledges that the distribution has not been carefully determined, and indicates that the data at hand have not been entirely worked up, suggesting that a second edition of the paper might become necessary in order to include this undigested material. It may be questioned whether it would not have been better had the publication been delayed until the work could have been more thoroughly done. However, there doubtless were reasons justifying the course taken, and works of this kind, devoted to the assembling of data relating to a particular class or type of articles, are always welcome to students since they save labor and research. It is therefore to be hoped that Mr Moorehead will complete to his own satisfaction the work so well begun, devoting, we would suggest, a little more space to the workmanship and finish exhibited by these objects, and to a presentation of the material which appears to bear on the question of their probable age. That they are comparatively modern seems to be the tendency of the evidence thus far obtained. As to the use of these articles the author confines himself chiefly to a statement of the opinions which have hitherto been advanced, offering no new solution of the problem.

CYRUS THOMAS.

L'Histoire du Sahagun et les Migrations Mexicaines. (Par le) COMTE DE CHARENCEY. Alençon: 1898. 4°, 82 pp., tables.

Of the Spanish writers whose accounts of the customs, manners, myths, and history of the natives of southern Mexico have been handed

down from the sixteenth century, none can be more highly regarded than Fray Bernardino de Sahagun, not only on account of the full, graphic, and interesting descriptions of what he saw and heard, but by reason of his presence among the natives of the section named at a period when they had not been materially influenced by the Spanish colonists.

Sahagun arrived in Mexico in 1529, remaining two years at Tepeapulco, thence proceeded to a suburb of the capital, where he spent a year in gathering information from the wise old men of the Nahuas. His *Relacion de las Cosas de Nueva España*, however, was not published until 1829, — three hundred years after his labors were begun, — its publication, even at this late day, being due to the historian Muñoz, who found a copy of Sahagun's manuscript in a convent at Tolosa. The friar expresses the belief that the first tribal immigration into Mexico was from the direction of Florida, or the northeast. From these tribes, he believes, were descended the Toltecs, celebrated for their artistic and professional abilities. Through their talent in these directions they acquired the designations Oxomoco, Cipactonal, Tlatecuin, and Xochicaueca, all of which tends to the further belief that these people were the originators of the Mexican calendar. Sahagun also regarded the Tolteca as a part of or identical with the Chichimeca.

The deity Quetzalcoatl is said to have ruled the Toltecs peaceably; for them his reign formed the golden age. Teotihuacan, with its temples of the sun and moon, especially clings to his name. The name of Quetzalcoatl means, simply, "beautiful twin" according to Charencey, who also regards Chicomoztoc as a station of passage, not of origin, of the migrating Nahuas.

The innumerable city legends and Mexican tribal origins make of Sahagun's work a treasure of information which will require a long period for modern scientists to exhaust or even to compare with the results of historical research reached through other channels.

A. S. GATSCHET.

Codex Telleriano-Remensis. Manuscrit Mexicain du Cabinet de Ch.-M. le Tellier, Archevêque de Reims, à la Bibliothèque Nationale (MS. Mexicain, No. 385). Reproduit en photochromographie aux frais du Duc de Loubat et précédé d'une Introduction contenant la Transcription complète des Anciens Commentaires Hispano-Mexicains par le Dr. E. T. HAMY. Paris: 1899. 4°, 47 pp., 50 pl.

In the year 1700 Charles Maurice le Tellier, archbishop of the diocese of Reims, donated fourteen ancient manuscripts to the Royal

(now National) Library at Paris, having previously been officially connected with that institution. This donation included Arabian, Hebrew, and other oriental writings of early origin, and also a Mexican codex known as the Codex Telleriano-Remensis. It is of large quarto size and contains fifty leaves of European paper, most of them inscribed on both sides. Judging from the water-mark it is assumed that this paper had been imported into Spain from Genoa, Italy. That which gives special value to the *Tellerianus* is the historical annotation in Spanish added to the colored Nahua pictographs which embellish every page and are intended to illustrate Mexican history in some of its more important details before and after the Spanish Conquest. The codex consists of three distinct portions, viz., (1) a calendar of stated days of ceremonial festivities, of which seven leaves are no longer extant; (2) a horoscopic volume, named *tonal-amatl*, of which seven leaves are also missing; and (3) a chronologic history of Mexican events.

The series of feast days in the existing portion of the codex begins with the seventh of the eighteen moons of the Nahuatl year; it was called *tecuil vitontl* and comprised the period equivalent to the end of our June and the beginning of July. A full list of the Nahua lunations or moons (of twenty days each) has been included (pages 7, 8) by the learned editor, Dr E. T. Hamy. The nemontomi or five intercalary days are inserted after the eighteenth moon.

The *tonalamatl* (*tonalli*, "sign of birth or nativity," and *amatl*, "paper") is divided into series of thirteen days each, thus forming a total of 360 days—five days less than the civil year. This curious monument of astrology is based wholly on superstition, but it gives an idea of the intellectual capacity of the people formerly inhabiting the central plains of Mexico.

The third portion, or chronologic history, is headed by the god Huitzilopochtli, represented as armed with reed-lances and ready for attack by a group of Indians dressed in skins of wild animals, and by a female figure called *Tonanicaca*, "our mother standing," as she is seen standing on the top of a hill. This personage is recognized as a common symbol of Aztlan, the mother country of the Nahua, a name which the historian Duran interprets "lugar de la blancura." Following is an enumeration of the towns and sites which the Nahua passed through on their celebrated migration from the northwest, all of them accompanied by the dates expressed in the calendar signs. The start was made from Aztlan in 1197, and the eight tribes which participated in the migration are given as Chichimeca, Nonoalco, Michihuaca, Cohuixca, Totonaca, Cuexteca, Olmeca, and Xicalanga. This list agrees pretty closely with

the one occurring in the parallel Codex Vaticanus, in which the tribes are represented as starting from the "seven caves." These names testify to the fact that at least four, if not five, racial and linguistic families of Mexico took part in the migration — the Nahuatl, Tarascan, Totonac, and Maya, the last mentioned being represented by the Huasteca. From 1197 to 1562 all the events which appeared to be of importance were carefully recorded by the chronicler — royal successions, conquests, wars, comets, eclipses, etc. In spite of many lacunes in the supputation of the year, the Codex Tellerianus, with its perfectly legible Spanish handwriting, forms one of the most valuable records of early Mexican events that has been handed down from the sixteenth century. Students of Mexican hieroglyphics will not fail to express their gratitude to the Duc de Loubat for his continued generosity in making available these means of prosecuting their inquiries.

A. S. GATSCHE.

Ceremonial Deposits Found in an Ancient Pueblo Estufa in Northern New Mexico, U. S. A. By GEORGE H. PEPPER. New York: 1899. 4°, 6 pp., 1 pl., 6 figs.

This brochure is a reprint, in highly creditable style, of the author's paper in *Monumental Records*, and describes one of many important results of the Hyde Expedition which for several seasons has been conducting excavations for the American Museum of Natural History in the pueblo ruins of Chaco cañon, New Mexico, under the immediate direction of Mr. Pepper.

Pueblo Bonito, which is the largest of nine great ruined towns in the cañon mentioned, measures about 300 by 550 feet, is semicircular in shape, and is surrounded by the remains of a massive wall which once enclosed the 500 rooms or more which formed this great communal structure. The pueblo contained two central courts or plazas, in the western one of which was exposed a circular kiva or council chamber, 25½ feet in diameter and constructed of faced blocks of sandstone. Excavation of the chamber revealed an adobe floor 15 feet beneath the surface, with the usual firebowl in the center. Surrounding the kiva wall was a bench 2 feet 2 inches wide by 2 feet high, built up across which, and at regular intervals, were six oblong masonry blocks or pillars. On the western side of the kiva, just before reaching the pillar level, a hollow clay cylinder, 6 inches in diameter, was found with the top broken in and the ends resting on two of the pillars, while on the bottom, and clinging to the inner face, were fibers and strips of bark which showed the former proximity of one of a series of logs, laid

horizontally in a circle, which supported the roof-beams in a manner similar to that employed in some of the still roofed kivas observed by Nordenskiöld in the Mesa Verde region. The removal of a circular adobe cap resting on one of the horizontal logs revealed a well-rounded cavity in which were deposited turquoise and shell beads, pieces of crude shell, and turquoise in the matrix. Examination of the roof-beams resting on each of the six supports on the kiva bench showed a similar log with its cavity containing an offering. These offerings Mr Pepper regards, and very reasonably, as a sacrificial deposit indicative of some ceremony connected with the construction of the kiva. The author calls attention to an interesting observation made by Dr Fewkes, who witnessed a house-dedication ceremony at one of the Hopi villages, noting that particles of food, shell fragments, and beads were deposited in a small cavity in the wall at the left of the doorway of the newly erected dwelling, which was then sealed with adobe.

There can be no doubt that as the researches of the Hyde Expedition continue in this fruitful field much knowledge will be gained concerning the culture of the Indians who built and occupied the cliff and valley dwellings of the cañon region of the Southwest, as well as the meaning of many of the surviving customs and rites among their living descendants.

F. W. HODGE.

History of the New World Called America. By EDWARD JOHN PAYNE. Vol. II. Oxford: Clarendon press, 1899, 8°, xxviii., 604 pp.

This is a work of great learning and originality. Volume I, which was printed in 1892, devotes its first 268 pages, called Book I, to the preparation of the Old World to discover the New, the finding of which was only an episode in the universal scheme of exploration. Book II, extending without a break or rest from page 269 in volume I to page 604 in volume II, is devoted to aboriginal America preparing itself unconsciously through the ages to enter the arena of history.

The fundamental activity in all this was the food quest, which the author claims first to have brought into prominence; but in this he neglects Morgan and Ward. However, he does insist louder than any predecessor that the search for food, the preparation of food, the very acts and noises of the food getter and devourer are at the root of progress.

A branch of the human species wandered into the New World, like other animal species procreated on the soil of the Old World, when the two—afterward parted by a depression of the earth's crust and the formation of a shallow strait connecting the Arctic sea with the Pacific

ocean—were continuous. Driven about by the increasing ice-fields of successive glacial periods, this branch spread over the New World in all its parts, while it was distinguished from the inferior animals only by some painful and strenuous form of articulate speech, by the possession of rude stone implements, and by the possession of fire-sticks. In each continent after ages and ages of changes, only the last of which were visible at the Conquest, one stock reached higher progress—the Nahuatlaca and the Aymara-Quechua. The formation of the Warrior and the Peasant class, or the development of militarism and industrialism consentaneously through food industries, and the evolution of religion continue the discussion of the first volume. The unit of aboriginal life and history is the pueblo, and the highest result of progress the dominant pueblo. In the middle of a paragraph on page 61 the panorama changes to the discussion of Migration, on page 78 to the discussion of Ethnological Unity, and at the bottom of page 81 to American languages. This third treats of the origin of language as shown in the languages of America. The unit of significance is not the root, but the holophrase or "polysyllabic unit of utterance." Articulation is traced from the strenuous movements in the mastication and ingestion of foods, through increasing oralization, relaxation, and adjustments. These strenuous movements had their origin in the erect position of the *Anthropoidea*. If these two hundred pages were printed separately they would form a memorable volume on philology. Sixty pages are devoted to primitive mathematics, in which the vicenary system is specially emphasized. Here the author would be pleased to examine McGee's late study on "The Beginning of Mathematics." The relation of arithmetic to calendars and cycles and to games finds abundant illustration in American studies. The remainder of the volume, commencing on page 372, takes up, first, indigenous advancement, with patolli for a text, proceeds across the Miocene bridge, to discuss the spread of man over the New World, the paleo-ethnic small race, who first wandered from the Old World to the New (three of whose crania are said to be in the Peabody Museum, taken from the Trenton gravels), the Eskimo, the Athapaskan, the Algonquian-Iroquois, the Nahuatlaca, and South American stocks and migrations. The Caribs are set forth with interesting originality and traced even into the Mississippi valley. The last hundred and fifty pages are devoted to Mexico and Peru, where the author is most at home and where he finds the best opportunity to demonstrate his theorem that the food quest overrides every other consideration in originating and developing human languages, industries, esthetic activities, social structures and functions, knowledges and religions.

In spite of the charming literary style, original suggestions, and great erudition displayed in this volume, we find it a difficult book to read. Instead of dividing it into chapters, the author has adopted the style of the double magic-lantern exhibition, in which, from beginning to finish, one picture fades from the screen and another takes its place without a break. The reader will acknowledge his obligation to the writer on every page for citations from old and rare books not within his reach, and if he misses any names it will be those of men now living and working. One regrets, for instance, to read hundreds of pages on ancient Mexico in which the name of Seler is wanting.

O. T. MASON.

PERIODICAL LITERATURE

GENERAL

Capitan (L.) *La science préhistorique, ses méthodes.* (Rev. de l'École d'Anthrop., Paris, Nov. 15, 1899, ix, 333-349.) The paper deals with the proper methods and utilization of other sciences in studies of the prehistoric; it should be read in extenso.—A. H.

Ethnographical collections in Germany. (Nature, Lond., Sept. 14, 1899, ix, 361-362.) Emphasizes the poverty of the collections in England by comparing them with those in Berlin.—R. B. D.

Holl (M.) *Ueber die Lage des Ohres.* (Mith. d. Anthr. Ges. in Wien, 1899, xxix, 171.) An examination of the correctness of the position of the ear in Egyptian (and classic) sculpture. The conclusions are that, in reference to the skull, the Egyptian sculptors placed the ear correctly; in reference to the face, the position of the ear seems abnormal, owing to a distortion of the features. This distortion consisted of an undue preponderance of the nasal over the lower region of the face, and was due to a desire to give the head the appearance of youth.—A. L. K.

Mahoudeau (Pierre G.) *Les premières manifestations de la matière vivante.* (Rev. de l'École d'Anthrop., Paris, Dec. 15, 1899, ix, 365-378.) The author reviews the main theories which have thus far been proposed to explain the appearance of life on the earth, and gives an extended notice to "Bathylus," the supposed most primitive living substance discovered. The conclusions of the erudite author are: "Life and motion are in reality one and the same phenomenon. Motion of extreme slowness suffices to the aggregations of inorganic molecules, while to the organic compounds of carbon a more rapid motion is necessary. The organic life is a very unstable, excessively rapid modification of the eternal motion of matter; it is the most delicate manifestation of that great universal life which commences at the atom of cosmic aether, to end, on

this planet, in the superior being man."
—A. H.

Temple (R. C.) *Beginnings of currency.* (Jour. Anthrop. Inst., Lond., 1899, ii, 99-122.) A discussion of the evolution of currency from barter by a recognition of a certain staple article as standard of value. Often the standard of value loses its usefulness, or it may never have had such usefulness, and becomes purely a medium of exchange. The examples given in the paper are taken from the Far East, but the accompanying plates illustrate currency from all parts of the world.—F. B.

Thulié (Henri.) *Origine du mysticisme.* (Revue de l'École d'Anthrop., Paris, Oct. 15, 1899, ix, 323-327.) The author attributes, as did Spinoza, the origin of mysticism to man's fears. Primitive man was exposed to many dangers and witnessed many inexplicable natural phenomena which sustained his fear and anguish. Night, lightning and thunder, and everything powerful or terrible, including dangerous animals and diseases, inspired terror and led primitive man to invoke the powers from which he suffered. Fire—precious, terrible, and unexplainable at the same time—became early the subject of cult. The fact that primitive man was everywhere exposed to radically the same dangers and witnessed similar natural phenomena, "explains the facts that all over the world, with all primitive people, we find the same superstitious procedures, nearly the same legends, deformed or transformed with transformation of the languages; and fundamentally the same cult, modified by surroundings and the level of knowledge. It is fear that is the starting-point of all those superstitions, mysticisms, and cults."

There are many long preserved traditions and usages among civilized peoples which are the remnants of their primitive mysticism.—A. H.

Vierkandt (A.) *Die primitive Sittlichkeit der Naturvölker.* (Globus, Braunsch., 1899, lxxvi, 149.) The morality of primitive man manifests itself

in the purity of sexual relations, hospitality, strength of social bonds among members of the community, and in their honesty. These phenomena are explained in several ways: Honesty is due to the fact that the publicity of life makes the concealment of theft, etc., impossible. The lack of strong competition between members of one community prevents the rise of struggles within the community. Uniformity in education and lack of intelligence and of a strong will to be considered further causes of the morality of primitive man.—F. B.

- Ward (R. DeC.)** Acclimatization of the white man in the tropics. (Bull. Am. Geog. Soc., N. Y., 1899, XXXI, 367-368.) Quotes various medical journals as upholding the theory that acclimatization is impossible.—R. B. D.

UNITED STATES AND CANADA

- Beauchamp (W. M.)** Archaeology in New York. (Am. Antiquarian, Chicago, 1899, XXI, 315-316, 344-348.) Publications of the New York State University on local archaeology.—H. I. S.

- Blake (William P.)** Aboriginal turquoise mining in Arizona and New Mexico. (Am. Antiquarian, Chicago, 1899, XXI, 278-284.) The use of turquoise is considered evidence of the racial unity of the prehistoric occupants of this region. The identity of chalchuite and turquoise discussed. An old shaft and a stone hammer, found near by, are illustrated.—H. I. S.

- Dennis (Alfred Pearce),** Life on a Yukon trail. (Nat. Geog. Mag., Wash., 1899, X, 377-391, 457-466.) Several pages are devoted to a popular description of the Indians ("Tahltan") of the region.—H. I. S.

- Gatschet (A. S.)** Water-monsters of American aborigines. (Jour. Am. Folk-Lore, Boston, 1899, XI, 255-260.) Aquatic monsters are found in the folklore of every people. Among the American Indians the monsters have in themselves more of animal than of human characteristics, and these appear usually in an exaggerated form. The horned eel, snakes, tigers, fish, etc., figure among these monsters.—H. I. S.

- Henning (Ch. L.)** Die Onondaga-Indianer des Staates New York. (Globus, Braunschw., 1899, LXXVI, 198, 222.) Information on the Onondaga reservation and traditional material obtained from Daniel La Fort and Albert Cusick, with references to older literature. The author reports that the clan organization is said to have been instituted by Hiawatha.—F. B.

- Horsford (Cornelia),** Vinland and its ruins. Some of the evidences that Northmen were in Massachusetts in pre-Columbian days. (Appleton's Pop. Sci. Monthly, Dec., 1899; also reprint.) The author adduces strong evidence to show that on "the only point of land on the coast of North America [i. e. the vicinity of the mouth of Charles river, Mass.] which we have found to correspond with the description of the site of Thorfinn Karlsefni's houses, ruins have been dug out which bear peculiar features characteristic of the period in Iceland known as the Saga-time, and differing in certain essential features from the handiwork of all the native races of North America, and, as far as is known at present, from all other races in Europe or in America in post-Columbian days."—F. W. H.

- Kroeber (A. L.)** Tales of the Smith Sound Eskimo. (Jour. Am. Folk-Lore, Boston, 1899, XI, 166-182.) Tales collected in 1897-98 in New York City from visiting Eskimo. Similarities with the tales of other Eskimo tribes are pointed out.—H. I. S.

- Lummis (C. F.)** My brother's keeper I-V. (Land of Sunshine, Los Angeles, Aug.-Dec., 1899.) A stringent criticism of the policy of the government toward the Indians, especially in regard to the methods of educating Indian children, based mainly on personal observation among the Pueblos.—A. S. G.

- Meredith (H. C.)** Aboriginal art in obsidian. (Land of Sunshine, Los Angeles, 1899, XI, 255-258.) A brief description of a collection of obsidian implements found in California and attributed to the "Digger" Indians. Some are of sickle shape, which, the editor explains, is due to the character of the material rather than to special effort in thus flaking it.—F. W. H.

- Peet (S. D.)** The cliff-dwellers and the wild tribes. (Am. Antiquarian, Chi-

1899, XXI, 349-368.) The author attempts to show the main points of difference between the wild tribes of the Southwest and the Pueblos and their cliff-dwelling ancestors. The paper is based solely on the work of others, without regard to its good, bad, or indifferent character; it contains nothing new, but much that is erroneous. Those who scan the illustrations (all of which have been used before) will recognize Dr Fewkes' portrait of the "Chief of the Antelope Priests" at Moki now doing service as a "Navajo priest."—F. W. H.

— The beginnings of pueblo architecture. (*Am. Antiquarian*, Chicago, 1899, XXI, 317-328.) An illustrated editorial containing long quotations mainly from Mindeleff.—H. I. S.

— Prehistoric irrigation. (*Am. Antiquarian*, Chicago, 1899, XXI, 285-306.) The social condition of the Pueblos is connected with irrigation; methods of storing water and of irrigating are touched upon and the distribution of ditches is mentioned. The author believes the ditches are older than has been supposed; their builders were agricultural people, under a village government, who changed from savage and nomadic life at a very early time and before the present geological conditions in that region.—H. I. S.

Putnam (F. W.) A problem in American anthropology. (*Science*, N. Y., Aug. 25, 1899, X, 225-236; *Nature*, Lond., Sept. 7, 1899, LX, 451-455.) In his address as retiring president of the American Association for the Advancement of Science, Professor Putnam reviews the development of the different theories as to the origin and unity of the American Indians. He considers that from cranial and other evidence several groups or types may be distinguished, and endorses the view that the American Indian does not constitute a homogeneous race. Both Esatfrican and Asiatic origins for these types are suggested. The mound-builders are regarded as related to the ancient Mexicans, the relationship being traced largely through the art and symbolism of the two peoples.—R. B. D.

Webber (Ellen R. C.) An old Kwantzum village—its people and its fall. (*Am. Antiquarian*, Chicago, 1899, XXI,

309-314.) A description of the shell-heap at Port Hammond, B. C., based on but little exploration. With it is given a legend, some details of which are incorrect, and ethnological notes from Port Hammond and the interior of B. C. All is woven into a history of the shell-heap for which the author has well disclaimed responsibility.—H. I. S.

Wickersham (Jas.) Notes on the Indians of Washington. (*Am. Antiquarian*, Chicago, 1899, XXI, 369-375.) The Washington State Philological Society is organized to include the study and recording of the Indian languages of the state.—H. I. S.

MEXICO AND CENTRAL AMERICA

Corner (Wm.) Milta: an archæological study of the ancient ruins and remains in that pueblo. (*Jour. Anth. Inst.*, Lond., 1899, II, 29-50.) The various ruins at Milta are described from personal observation and are illustrated by seven plates and ten text figures. Discussions of a theoretical nature by Mr Mandlay and Col. Geo. Carl Church follow.—J. R. S.

Förstemann (E.) Drei Inschriften von Palenque. (*Globus*, Braunsch., 1899, LXXVI, 176.) Proof that the inscriptions in the three temples of Palenque are closely related.—F. B.

Starr (Frederick.) Holy Week in Mexico. (*Jour. Am. Folk-Lore*, Boston, 1899, XII, 161-165.) Some elements which enter into Holy Week celebration in Mexico are found in every Catholic land; some are simply Spanish, but others are peculiar to Mexico.—H. I. S.

SOUTH AMERICA

Berlin (A. F.) Terra-cotta antiquities from the land of the Incas. (*Am. Antiquarian*, Chicago, 1899, XXI, 271-277.) Description of pottery, dishes, stamps, etc., in the collection of the late Dr T. W. Detwiller, of Bethlehem, Penn.—H. I. S.

Moreno (F. P.) Explorations in Patagonia. (*Geog. Journ.*, Lond., 1899, XIV, 243-269, 353-373.) Although primarily geological and geographical in its nature, Dr Moreno's paper deals incidentally with archæological matters.

The remains of the now extinct races in this region are said to resemble those of the Chaco and Brazil; some remains were found differing from all others as yet discovered in South America. Cranial deformation of all types was noticed.—R. B. D.

ASIA

de Barthelmy (*Comte*). An pays des Moïs. (Bull. Soc. Géog. de Paris, 1899, 7^e sér., XX, 330-343.) The term "Moïs" means merely "savage," hence many different tribes are confounded under one name. Two of these tribes, the Daviats and the Sedangs, are referred to, the former building their villages in the open and fortifying them, the latter concealing their small towns in the depths of the forest.—R. B. D.

Bastian (A.) Mittheilungen von einer Reise nach Niederländisch-Indien. (Verh. d. Berl. Ges. für Anth., Ethn., u. Urgesch., 1899, XXXI, 420.) Deals with the Mohammedan, Hindu, and fetishistic elements of Javan religion.—A. L. K.

Carey (F. W.) A trip to the Chinese Shan states. (Geog. Journ., London, 1899, XIV, 378-394.) A brief account of the Shans is given, and reference made to the Akkas and Loles, two tribes differing in some respect from the Shans.—R. B. D.

Collineau (*Dr*). L'infanticide et l'avortement en Chine. (Revue d. l'École d'Anthrop., Paris, Nov. 15, 1899, IX, 350-353.) These observations proceed from Dr Matignon, of the French Legation at Peking. Infanticide and abortion in China, according to these reliable observations, are not so common as reported by some authors, nevertheless they are frequent and are practiced with "more cynicism" than in other countries. Means to prevent conception or to produce abortion are openly and undisguisedly advertised. The most frequent causes of these practices are poverty and all forms of superstition. A daughter is considered "a merchandise from which one cannot relieve himself except at a loss," which sentiment favors female infanticide. In certain localities the girls are preserved only because they may once possibly become a source of revenue by being sold into prostitution. The

author enumerates the main causes of infanticide connected with dogma and superstition; again female infants are at a disadvantage. The death of the infant is decided by the family; methods of death differ, but drowning of some sort and exposure to cold predominate.—A. H.

Duckworth (W. L. H.) Note on a skull from Syria. (Jour. Anth. Inst., Lond., 1899, II, 145-151.) The subject of this sketch was "picked up" near Damascus after the massacres of 1860. After comparing it with other skulls from the same region the author seems inclined to regard it as from an individual who if not a Turk at least had Turkish blood.—J. R. S.

Holdich (T. H.) Swatis and Afridis. (Jour. Anth. Inst., Lond., 1899, II, 2-9.) The ruling class among the Swatis are Afghans, and they have been subjected by the successive rulers of the Punjab; the Afridis are of Indian origin, living from remote times in isolated independence. They are divided into bands, but there is scarcely any more centralized form of government in each than the paternal. They are characterized as treacherous, cruel, and regardless of family ties, but, on the other hand, brave, intelligent, and respecters of civilized methods of warfare.—J. R. S.

— The Arab tribes of our Indian frontier. (Jour. Anth. Inst., Lond., 1899, II, 10-16.) This paper is supplementary to the preceding, taking in the southern section of the northwestern border of India. In spite of the barrenness of the country, Baluchistan, lying on the high road between Persia and India, has been traversed and occupied by innumerable peoples from early times. Remnants of a very large number of these are still in the country. Most prominent are the Brahuis in the west and the Baluch in the east which the author classes as Dravidian and Arabian respectively. In character, especially in the absence of fanaticism, the Baluch compare favorably with the northern tribes. In the discussion which this paper called forth, an Aryan origin of the Baluch was advocated rather than an Arabian origin.—J. R. S.

Karsten (Paula). Kinder und Kinderspiele der Inder und Singhalesen.

(Globus, Braunsch., 1899, LXXVI, 213, 234.) Observations on a visiting troupe of natives of India in regard to the treatment of infants, early marriages, and children's games.—F. B.

Klementz (D.) *Voyages de Dmitri Klementz en Mongolie Occidentale*. (Bull. Soc. Géog. Paris, 1899, 7^e sér., XX, 308-329.) A brief account of the explorations of the author from 1885 to 1897, apparently as a member of the Prjevalsky expedition. The Sorots of the Salan mountains, a people related to the Samoyeds but long under Turkish influence, are described; some details in regard to the Buriats are also given. Ruins and inscriptions, the work of an earlier population, were found throughout the area.—R. B. D.

Olsufjev (A. W.) *Der Anadyr-Bezirk nach A. W. Olsufjev*. Trans. by D. Krahmer, (Petersb. Mitt., Gotha, 1899, XIV, 29-37, 228-235, 261-268.) In the second of these three articles the Chukchi are described in some detail. Their division into groups, their physical characters, dress, social organization, and mode of life are taken up in succession. The Lamuts, as the Tungus are called in this region, differ from the Chukchi very considerably, are inferior to them in physical development, and are hunters and not pastoral or settled people as are the Chukchi.—R. B. D.

Preuss (K. Th.) *Die Zauber-Muster der Orang Semang in Malaka*. Nach den Materialien von H. V. Stevens. (Zeitschr. für Ethn., Berlin, 1899, XXXI, 137.) A continuation of the investigation begun by A. Grünwedel in vol. XXV of the same journal. The designs, or pictographs, which are supposed to avert disease by magic, are cut into bamboo combs or sticks and carried on the person. Each design prevents a malady and seems to consist chiefly of the symbol of that disease and the symbol of a flower having magic power. The system is highly developed and complex, and not yet altogether clear.—A. L. K.

Rösler (E.) *Ausgrabungen in Transkaukasien*. (Verh. d. Berl. Ges. für Anthr., Ethn., u. Urgesch., 1899, XXXI, 243.) Some of the finds give evidence of an advanced state of technology.—A. L. K.

Schumacher (Rob.) *Eine Reise zu den Tschin-huan in Formosa*. (Globus, Braunsch., 1899, LXXVI, 217.) Description of a visit to the mountain tribes of Formosa, with sketches of implements.—F. B.

von Stenin (P.) *Jochelsons Forschungen unter den Jukagiren*. (Globus, Braunsch., 1899, LXXVI, 166.) A brief summary of W. Jochelson's important investigations on the Yukagheer. Report on the traditions, customs, and social organization of this tribe. They had no chiefs. Forms of respectful address, like those present in other Asiatic languages, occur. Women erect the tent, carry game home, and do household work. The armor, which is made of rods of reindeer antlers, is decorated. Tribal feuds were often settled by duels between prominent men. Two interesting pictographs (charts) accompany the paper.—F. B.

Turley (R. T.) *Through the Hun Kiang gorges; or notes of a tour in No Man's Land, Manchuria*. (Geog. Journ., Lond., 1899, XIV, 292-302.) Contains a few details as to the distribution of the Koreans and Chinese in this region, the susceptibility of the latter to fevers, and their organization into guilds.—R. B. D.

AUSTRALIA AND PACIFIC ISLANDS

von Bülow (W.) *Beiträge zur Ethnographie der Samoa-Inseln*. (Int. Archiv f. Ethnog., Leiden, 1899, XII, 129-145):

III. *Das Handwerkzeug des Tatuierers*. Brief description of implements and methods of Samoan tattooing.

IV. *Die Taube in den Sprachbildern der Samoaner*. Account of peculiar influences of the dove, dove hunting, etc., upon the vocabulary, particularly in modifying the so-called 'Häuptlings sprache' as distinguished from the vernacular. The fact that the dove is but slightly concerned in the religious myths may account for its selection.

V. *Te toga (Heilige Matten)*. Describes hand-plaited mats used as sacred offerings and on ceremonial occasions. Regarded as gifts of the gods. Tradition to that effect is given in Samoan with German translation.

VI. *Der Ursprung des Aitu Muso*. Tradition in Samoan with German translation.—I. F.

Karutz (Dr.) Drei Knochengewerthe von den Anachoreten. (Int. Archiv. f. Ethn., Leiden, 1899, XII, 146-148.) Description and discussion of bone implements in the Lubeck Museum.

von Luschan (F.) Neue Beiträge zur Ethnographie der Matty-Insel. (Int. Archiv. f. Ethn., Leiden, 1899, XII, 121-128.) A brief report of observations and collections made during a visit in 1897 of the German man-of-war *Falk* to Matty island, off the coast of New Guinea. Weapons and utensils are described, and a photograph and drawings of a characteristic and very interesting form of native canoe are given. No physical measurements nor linguistic results. Question of stock relationship remains unsolved.—L. F.

Perkins (Herbert) Some Australian tree carvings. (Jour. Anth. Inst., Lond., 1899, II, 152.) These tree carvings are preserved in the Australian Museum at Sydney. It was thought that they might refer in some way to the boomerang, or have been set to mark the graves of certain prominent men, but the author suggests that they had some connection with the "Bora" rites of initiation to manhood. All are said to come from one district of central New South Wales, west of the mountains. The paper is illustrated.—J. R. S.

Roth (H. Ling) Cave shelters and the aborigines of Tasmania. (Nature, Lond., Oct. 5, 1899, LX, 545.) Note on the discovery of a cave shelter near Hobart.—R. B. D.

AFRICA

Bennett (Albert L.) Ethnographical notes on the Fang. (Jour. Anth. Inst., Lond., 1899, II, 66-97, 3 pl.) A very complete ethnographical account of this West African tribe by one long resident among them. It is especially full in the sections devoted to fetiches and religious rites, and contains some material regarding the "African pygmies."—J. R. S.

de Cardi (Comte C. N.) Ju-ju laws and customs in the Niger delta. (Jour. Anth. Inst., London, 1899, II, 51-63.) The account of customs and rites given under this head are from one who has had long and direct experience with the natives of the region indicated. The

chief headings in the paper are "Ju-juism," "Native curse-words and sticks," "Clitoridectomy." In the "discussions" following Miss Kingsley furnishes much information regarding the social organization of the Kru. The text is illustrated by two plates and supplemented by four reproductions from photographs of Sherbro, west coast of Africa.—J. R. S.

Dorsey (G. A.) The ocimbanda, or witch-doctor of the Ovimbundu of Portuguese Southwest Africa. (Jour. Am. Folk-Lore, Boston, 1899, XII, 183-188.) Description of a complete "medicine chest" of a witch-doctor.—H. I. S.

Hutter Politische und sociale Verhältnisse bei den Graslandstämmen Nordkamaruns. (Globus, Braunsch., 1899, LXXVI, 284, 303.) Description of the political organization and methods of warfare, trade, and laws of the tribes northeast of Cameroon.—F. R.

Marriott (H. P. Fitzgerald) The secret societies of West Africa. (Jour. Anth. Inst., Lond., 1899, II, 21-27.) This is an abstract only, and the facts contained were drawn principally from sources beyond the author's immediate experience. The compilation bears upon a very important phase of African culture in the region west of the Niger.—J. R. S.

EUROPE

Bünker (J. R.) Das siebenbürgisch-sächsische Bauernhaus. (Mitt. d. Anthr. Ges. in Wien, 1899, XXIX, 191.) A contention that the German peasant house of Transylvania is typically Aryan and not of specifically South German origin.—A. L. K.

Ella (Samuel) Dialect changes in the Polynesian languages. (Jour. Anthrop. Inst., Lond., 1899, II, 154-180.) A concise and apparently full summary of phonetic changes among the various Polynesian dialects is given, followed by a brief account of the grammar and a comparative list of several common Polynesian words. The author has had long experience among the peoples speaking these dialects, especially in the Samoan group.—J. R. S.

Český Lid [a Czech journal devoted to Czech and Slavonic folklore and ethnology, Ed. B. Niederle, director

Czech Ethnology. Museum, Prague, Bohemia], vol. ix, Prague, 1899. This volume contains a large number of interesting smaller contributions to Czech and Slavonic folklore, ethnology, and archeology. O. Fišer and F. J. Čečetka contribute to the history of vasalage in Bohemia. O. Malec, A.

Hlavinka, and Č. Zítort describe the picturesque costumes worn by the common people in certain districts of Bohemia and Moravia. Papers by F. Kretz and R. Tyršova deal respectively with the subjects of lace making and embroidery among the common people.

Dušan Jurkovič describes the painting of certain external parts of the houses in Valachia, while V. Hauer gives the nomenclature of various parts of the house in Silesia. Dances and songs of the people are the subjects of the com-

munications of A. Alavinka, J. Š. Baar, J. L. Holub, J. Vluka, K. V. Adámek, L. Quis; while some tales, collected among common people, are given by I. Hošek and F. V. Bouchal.

Č. Zítort continues his effort toward explaining the superstitions among the Czecho-Slavonic peoples at the end of last and the beginning of this century.

Č. Holas writes about "traditional literature." F. Kretz contributes to the history of a certain type of pottery in Slavonia. Mushrooms in western Moravian folklore is the title of a paper by F. Silhavý. J. V. Neudorfer describes an interesting custom among the common people of the Chotěboř district.

The day consecrated in the calendar to Sta Katharina is a "ladies' day." The women prepare an elaborate feast for the occasion, which is participated in mainly by married people. The wife on this day assumes the role and the rights of her husband, and vice versa. There is a dance in the evening, and the women continue in the masculine role by choosing the partners, paying the musicians, ordering the "solos," etc. The men submit cheerfully to their feminine role. This performance ends at midnight with a grand supper, after which a regular dance, in which the unmarried also participate, is conducted. K. Lábler reports some curious municipal rules, from the year 1582, in Brandejs nad Labem. Finally, J. Vyhliďal writes about the life of Silesian children, describing certain

of their customs, ditties, calls, etc.

The numerous contributors of *Cesky Lid* are mainly teachers, physicians, and other more or less scientific men, who are in direct contact with the common people. Of Czecho-Slavonic folklore, songs, dances, and customs there is almost no end, and they differ more or less in every district and almost in every old village.—A. H.

Kaindl (Raimund F.) *Zauberglaube bei den Hunnen*. (Globus, Braunschwig., 1899, LXXVI, 320, 352.) Kaindl published a description of the beliefs of the Ruthenians on witchcraft in *Globus*, vols. 61 and 71. The beliefs of the Hunnians, the Ruthenians of the mountains, are described in the present paper. Most sorcery is believed to be accomplished with the help of the devil; but other means are also available. The belief in vampires is current. Some tales regarding vampires and witches are given. Certain people are able to exert supernatural control over the weather. Hail and storms are believed to be the work of the devil. Cattle may be bewitched and protected or cured by supernatural means. Sickness is cured in the same way. The author also describes philtres, beliefs in regard to fishing, hunting, etc.—F. B.

Ohnefalsch-Richter (M.) *Neues über die auf Cypern angestellten Ausgrabungen*. (Verh. d. Berl. Ges. für Anthr., Ethn., u. Urgesch., 1899, XXXI, 298.) The author continues his report of the results of excavations, and concludes by tracing the development of Cyprian culture and emphasizing the importance of the island as the chief ancient point of communication of Orient and Occident.—A. L. K.

Read (C. H.) *Presidential address*. Section H, British Association for the Advancement of Science. (Nature, Lond., Oct. 5, 1899, ix, 554-557.) Treats of the necessity of expert as against amateur investigation of archeologic remains in England, and urges the prosecution of anthropologic work in the British Empire on the scale that it is being carried on in Germany.—R. B. D.

Tetzner (F.) *Die Philipponen in Ostpreussen*. (Globus, Braunschwig., 1899, LXXVI, 181-192.) Description of the history and customs of the descendants of a Russian sect in eastern Prussia.—F. B.

NOTES AND NEWS

The International Congresses.—As announced in the last issue of this journal the fourth INTERNATIONAL CONGRESS OF PSYCHOLOGY will be held under the patronage of the French government in the Palais des Congrès of the Paris Exposition, August 20th to 25th. The first international reunion of psychologists was held during the Paris Exposition of 1889, and resulted in periodical meetings with a permanent organization. The second congress met in London in 1892, and the third, which arranged the organization of the coming meeting, in Munich in 1896. The congress appeals to all who may be interested in the study of the human mind. The president of the committee is Prof. Th. Ribot, the vice-president Dr Charles Richet, and the secretary Dr Pierre Janet, while of the seven sections of the congress Professor Delage is chairman of the section of animal and comparative psychology, anthropology, and ethnology.

The twelfth INTERNATIONAL CONGRESS OF PREHISTORIC ANTHROPOLOGY AND ARCHEOLOGY will be held in the Palais des Congrès, August 20th to 25th, the meetings being synchronous with those of the Congress of Psychology. The committee of organization is an unusually strong one, consisting of thirty-one of the most prominent anthropologists in France. Its officers are M. Alexandre Bertrand, president; M. Albert Gaudry and Dr E. T. Hamy, vice-presidents; Dr R. Verneau, general secretary; Dr G. Papillault, secretary; M. Henri Herbert (74 rue Claude-Bernard), treasurer. The membership fee is fifteen francs.

The INTERNATIONAL CONGRESS OF ETHNOGRAPHIC SCIENCES will hold its third session in the Palais des Congrès, August 26th to September 1st. The committee of organization are: President, M. Maurice Block, president of the Société d'Ethnographie; first vice-president, M. le Baron Textor de Ravisi; vice-presidents, MM. Boban-Duverger, Gauttard, Greverath, and Léon de Rosny; general secretary, M. Georges Raynaud; secretaries, MM. René Allain, Laporte, Pouvrier, and Thomas; treasurer, M. Leclère. American ethnologists proposing to attend the meetings of the congress or contemplating the presentation of papers should communicate as soon as practicable with M. Boban-Duverger, 18 rue Thibaud, or with the general secretary at 82 rue

Mouffetard. The membership fee is 12 francs. The congress will comprise seven sections, as follows: I, General ethnology; II, sociology, ethics; III, ethnographic psychology; IV, science of religion; V, linguistics and paleography; VI, arts and industries; VII, descriptive ethnography.

THE INTERNATIONAL FOLKLORE CONGRESS will hold its session at the Palais des Congrès, September 10-12, the general subjects to be discussed being classed under the sections Oral literature and popular art, and Traditional ethnography. The membership fee is 12 francs. Although French has been designated as the official language of the congress, papers may be presented also in German, English, Italian, and Latin, in which latter event they must be accompanied by a résumé in French, and should be in the hands of the secretary by July 1st. The committee of organization consists of M. Gaston Paris, honorary president; M. Charles Beauquier, president, MM. J. F. Bladé, Loys Brueyre, and Eugène Müntz, vice-presidents; M. Paul Sébillot (80 Boulevard Saint-Marcel), general secretary; MM. Émile Blémont, George Doncienx, and Raoul Rosières, secretaries; M. A. Certeux, treasurer.

No meetings of greater interest to American anthropologists will be held during the exposition than those of the twelfth INTERNATIONAL CONGRESS OF AMERICANISTS, which also will be held under the patronage of the French government, the session beginning September 17th. The committee of organization has been selected from the Société des Américanistes de Paris, in accordance with the decision of the last congress. The president is Professor Hamy, with Prince Roland Bonaparte and the Marquis de Nadaillac as vice-presidents. Among the members of the committee are Baron de Baye, M. Desiré Charnay, Professor Lavasseur, M. le Duc de Loubat (who has been so instrumental in advancing the interests of American anthropology), MM. Maspero, Oppert, and Rosny, and Mr Henry Vignaud of the United States Embassy at Paris. The general secretary is M. Henri Froidevaux, 12 rue Notre-Dame-des-Champs; the treasurer, M. Jules Hebert, Musée d'Ethnographie du Trocadero, Paris. The object of the International Congress of Americanists is to contribute to the progress of scientific research concerning the Western Hemisphere, especially for the periods preceding and immediately following the discovery. Any person interested in the subject may become a member on payment of the subscription of 15 francs. The work of the congress has been divided into four sections, embracing practically every phase of American archeology, ethnology, and early history, as follows: 1, History and geography; 2, anthropology and ethnology; 3, archeology; 4, linguistics and paleography. Memoirs

requiring more than fifteen minutes for reading will be presented only by abstract and in French. Papers by persons unable to be present should be in the hands of the secretary before September 1st.

It is hoped that American students will be well represented at the various congresses either in person or by papers. The latter will be published, with illustrations when necessary, in the reports of the respective congresses, which are sent free to members.

Mexicans and Fatalism.—In nothing, perhaps, are the Mexican inhabitants of southwestern United States more markedly peculiar than in their fatalism. "God has so willed it; so may it be," is one of their commonest aphorisms—the idea upon which the most trivial actions of their lives appear to be based.

The town of Socorro, situated on the Rio Grande, 75 miles south of Albuquerque, New Mexico, had suffered terribly from floods which, in the rainy season, were carried from the mountains by arroyos passing directly through the town. On examination it was discovered that by a small expenditure of money two miles above the place, the waters could be diverted, thereby making life and property perfectly safe. Don Camilio Baca, a large property-holder, when approached in regard to a subscription for the purpose of carrying out this work, replied, "God placed the arroyo there, and there is where I want it to stay." And this, too, in spite of the fact that his own house had been washed down in a recent flood.

The smallpox may be raging in its most virulent form, but the Mexicans—so far from seeking to avoid it—will take their children with them when they visit a house in which it is present. An American who was once taken care of in the house of a Mexican (by the way, the Spanish language has no word for home) while suffering severely from smallpox, told me that the women would bring their babies and lay them on his bed in order that they might contract the disease. This was done with a twofold purpose—that the children might have it when small (at which time they think it less likely to prove fatal), and that the parents might not be put to the trouble of rearing their children only to have them die after all. And yet, as parents, they are ordinarily most kind and pleasant, this apparent hard-heartedness being merely a reflection of their fatalism. Living as they have for generations in usually floorless, insanitary houses, generally crowded closely together even in the small towns, formerly without medical assistance being obtainable, has tended to foster the idea of submitting to what they imagine is "God's will."

I know of one little town that lost thirty-eight of its forty-five children

at one visitation of smallpox—nearly all under twelve years of age—that length of time having elapsed since the last scourge had swept over them. The disease in this case was particularly fatal, but even in this instance there was an acquiescence unknown to people of Anglo-Saxon derivation. In many of these cases, no doubt, the children would not have contracted the disease had they not been purposely exposed to it. The Mexicans who live in or near American towns, or towns in which the American population predominates, have, of course, learned more of modern thought in regard to such things than have those of the more isolated villages, or the rural folk.

This fatalism, while producing many serious results, has still its redeeming features. It leads to a certain contentedness, a sort of placid cheerfulness, that is somewhat of a relief to the insistent American strenuousness that will not down.

While the ordinary Mexican has a roof to shelter himself and family,—no matter how humble his abode may be,—and a little food in the house, he seems to be perfectly happy. Life, to him, is not a perpetual battle of acquisition. He is as happy over his pot of beans and chile, with the inevitable tortilla, as a crowned king.

When a member of a family dies, one or two days will be given up to mourning, after which they appear entirely reconciled to the new conditions and all vain regrets are banished. I have heard but once of any violent or dangerous outburst caused by grief at the death of a relation. In this instance a physician had been called to attend a young man, bedridden with a long-neglected case of diphtheria. After taking some medicine, the patient appeared to grow much better, and getting out of bed, bade his people good-bye. He then lay down again and was dead within fifteen minutes. The old father, frantic with grief, obtained a knife and was prevented only by force from attacking the doctor.

The men are usually kind and affectionate husbands; but very seldom does it happen when a woman dies that her husband remains single for a long time; indeed many are married within six weeks or three months. Fatalism includes in its list of attributes not only the art of expecting and submitting, but also that of forgetting.

U. FRANCIS DUFF.

Polynesian Ethnology.—In a recent letter to Mr William H. Babcock of Washington, Mr Edward Tregear, the well-known ethnologist of Wellington, New Zealand, writes as follows regarding the natives of that and other islands of Polynesia:

“The only people of New Zealand who can be called mountaineers

are the Uruwera of the eastern coast. Do I consider these mountaineers and the Moriori of the same race? Well, no, only as branches of the Polynesian race, just as Maoris and Tahitians are the same people. The Moriori were a peaceful, quiet people, almost without weapons, untattooed, with their language full of queer sounds. The Uruwera, on the contrary, were a very warlike and grim people, apparently of real New Zealand stock. Our best authorities consider them 'the people of the land,' who were here centuries at least before canoes came from Hawaiki five hundred years ago. They claim to be autochthonous, but that is doubtful, for they have the regular Polynesian legends born in far other lands than these. There is absolutely no sign that New Zealand was occupied by a dark—a Negrito—people. The Uruwera have among them many people with fair hair and blue eyes (with no possibility of European cross), so that by the other Maori they are called 'Fair-haired.' The fairies of the Maori are also said to have fair hair and blue eyes, so that the elves-and-gnomes theory would be untenable here if the prior inhabitants had been short and swarthy like the Andaman and Nicobar islanders. I must mention, however, that the Maori recognize some short, dark fairies—the *turehu*.

"I believe that the Maori darkened in this way: Their canoes, as they passed eastward from India, were full of bold and warlike explorers, with few if any women. As they reached the Malay islands they stopped to plant food. Their yams and taro grown, they started again, perhaps in a year, perhaps not for a century; but wherever they stopped they took the women of the land as wives. At first then, the Malays had not come down from southeastern Asia. Then on to Papua, to the New Hebrides, New Britain, New Caledonia, Fiji,—always black wives, always darkening from the original Aryan type.

"If by Maoris one means the 'Norman invasion' from Hawaiki five hundred years ago, there were certainly people here before them. There are forts in New Zealand of almost that age, with giant trees growing from their earthworks, one of the latter being three miles in length. Ten thousand men could hardly defend such a wall. There are parts of the country where forty great forts may be counted at once. The country must have swarmed with people, and all these had to descend from a handful of canoemen and three or four women. Moreover, their legends tell of fierce battles which were fought soon after landing. But whether these inhabitants were Papuans or a prior migration of Polynesians cannot be determined.

"The Uruwera are the same in appearance as other New Zealand

peoples if we except the occasional light hair. They are utterly unlike the Negrito or Papuan, they have no tint or shade of that dusky black under the skin that marks the Hindoo people, nor of the 'blue black' of the Fijian and Melanesian. They do not differ in stature, appearance, tattooing, or anything else from the true Maori, except that, owing to their isolation, they have kept their native bearing and ancient customs in greater purity.

"I have not observed much difference between the Moriori and the Maori. Most of the Moriori had Jewish noses; Tapu, their priest-chief, had a most tremendous Jewish nose. Their language is, I think, a subdialect of Maori, but with queer variations. Strangely enough they have the Eastern causative. A causative prefix *whaka*, or *faka*, is applied to verbs in New Zealand, Tonga, Samoa, and West Polynesia—*haere*, to go; *whaka haere*, to cause to go; *takoto*, to lie down; *whaka takoto*, to lay down. In the east—Hawaii, the Marquesas, etc.—the natives use *hoko* or *hoo* for *whaka*, and this the Maori also do.

"I have visited the Chatham islanders and talked with their oldest priest, noting their genealogies, legends, etc. Mr W. A. Shand, a native interpreter at the Chathams, was born among them and is the only man who thoroughly understands that curious and nearly extinct people, their language, religion, etc. He has published, in parts, in the *Polynesian Journal*, a complete history and description of the Moriori, giving the legends in their dialect, their songs, etc."

Divisions of Some West Australian Tribes.—In an article contributed in 1898 to the American Philosophical Society, I described the eight intermarrying divisions of the Wom-by-a tribe, occupying the Cresswell Downs station and surrounding country. In that paper it was stated that this eight-section system extended from the boundary of Queensland to that of West Australia, and that it was in force over the greater part of the Northern Territory, a name given to the northern portion of South Australia.¹ Later in the year I ascertained that eight analogous sections, with slight variations in the names, existed among native tribes in the northwestern corner of Queensland. The names of these eight sections, with the order of their intermarriage and the descent of the offspring, are fully detailed in an article published in the July, 1899, issue of this journal.

More recently it has been my good fortune to obtain reliable particulars of a similar eight-section system among some large and important tribes in West Australia. The tribes dealt with inhabit the

¹ *Divisions of Australian Tribes*; Proc. Amer. Philos. Soc., Phila., vol. xxxvii, pp. 131-154.

country from Cambridge gulf southward for about 300 miles and extending westwardly from the boundary between the Northern Territory and West Australia for a hundred miles or more. This immense area includes the country drained by Ord, Denham, King, Forrest, and other rivers, Stirling creek, Sturt creek, Margaret river, and down Fitzroy river from its source to Minnie Pool, or farther westward. Some of the best known of the tribes within the geographic limits mentioned are the Lunga, Keha, Ferrakee, Mayu, Goonien, Nigena, Booneba, Jarrou, and Wolmaharry. The nomenclature of the eight sections in use among these tribes, their laws of intermarriage, and the designation of the children will readily be understood by an examination of the following table :

PHRATRY	PARENTS		CHILDREN	
	FATHER	MOTHER	SON	DAUGHTER
A	Jungurra	Nungulla	Jabulgis	Nabijerry
	Jackara	Nabijerry	Jullimar	Naboron
	Janima	Naboron	Jungary	Nabungarty
	Jambidgma	Nabungarty	Jangula	Nungulla
B	Jangula	Nangilee	Jambidgma	Nambidgma
	Jungary	Nambidgma	Janima	Nabina
	Jullimar	Nabina	Jackara	Nackara
	Jabulgis	Nackara	Jungurra	Nangilee

As hitherto explained in dealing with similar organizations among the tribes of the Northern Territory and Queensland, the community is segregated into two phratries, each of which is subdivided into four sections. Each phratry has perpetual succession, or is maintained intact, by means of its women. For example, the daughter belongs to the same phratry as her mother, but to a different section. Taking the genealogy of the women composing phratry A in the above table, it is seen that Nungulla is the mother of Nabijerry; Nabijerry has a daughter Naboron; Naboron produces Nabungarty; and Nabungarty is the mother of Nungulla, being the sectional name with which we commenced, and this series is continually repeated in the same order. Every woman, therefore, takes the same sectional name as her great-great-grandmother, descent being invariably reckoned in the maternal line.

In examining the table it will be observed that the sons take the sectional name of their paternal grandfather. For example, a Jungurra

man begets a son Jabulgie by a Nungulla woman of phratry A. Jabulgie on attaining puberty marries Nackara, one of the women of the B phratry, and begets a son Jungurra, being the sectional name of his grandfather. The men who marry the women of the A phratry are the fathers of the men who marry the women of the B phratry, and *vice versa*.

R. H. MATHEWS.

Deaths.—Since the publication of the last number of this journal, death has removed a number of eminent men whose researches in various fields of anthropology have been of world-wide importance. SIR JOHN WILLIAM DAWSON died at Montreal, November 19th, aged seventy-nine years. Although preëminently a geologist, his studies dwelt long on the borderland of the Science of Man, and several of his contributions to the subject have become classic. In 1860 he published "Archaia, or Studies of the Cosmology and Natural History of the Hebrew Scriptures"; in 1873 his "Story of the Earth and Man" first appeared, and it has since passed through many editions. Dawson's "Science and the Bible" (1875), "The Dawn of Life" (1875), "Fossil Men and their Modern Representatives" (1878 and 1880), were published in the order given; his contributions to periodical literature and to the publications of various scientific institutions are numerous and many of them highly important. The loss of Sir William Dawson is a serious one to the scientific world, and particularly will it be felt by the institutions with which he had been so long and so honorably associated.

Although perhaps more widely known through his contributions to ornithology and kindred subjects, DR ELLIOTT COUES, who died at Johns Hopkins Hospital, Baltimore, December 25th, aged fifty-seven years, did much to elucidate the problems in the ethnology and history of the regions covered by various early explorers of the Great West. Lewis and Clark, Pike, Thompson and Henry, Fowler, Larpenteur, and Garcés blazed the way through unexplored wilds, but the value of their labors was increased a hundred-fold by the scholarly treatment which their journals received at the hand of Elliott Coues.

WALTER JAMES HOFFMAN died at Reading, Pennsylvania, November 8, 1899, aged fifty-three years. Born at Weidasville, Pa., May 30, 1846, he was graduated from Jefferson Medical College, Philadelphia, in 1866, and practiced his profession in Reading until the outbreak of the Franco-Prussian war when he was commissioned as surgeon in the Prussian army. On his return to the United States he was appointed acting assistant-surgeon, U. S. army, and was detailed as naturalist to the Wheeler Survey during its explorations in Arizona and Nevada.

In 1872 he was ordered to Grand River agency, North Dakota, and detailed as surgeon of the Northern Pacific Railroad Survey under General Stanley. In 1877 he became a member of the Hayden Survey as ethnologist and mineralogist, and at the organization of the Bureau of Ethnology in 1879 accepted an appointment as assistant ethnologist. His researches led him among many Indian tribes, notably the Ojibwa and the Menomini, and his memoir on the latter tribe, published by the Bureau of Ethnology, was awarded honorable mention by the Loubat Prize Committee in 1898. Dr Hoffman's bibliography is extensive both in number and in scope. He was a member of many European and American scientific and historical societies, and until shortly prior to his death was United States Consul at Mannheim, Germany.

Other Recent Deaths : DR ADOLF ERNST, Director of the National Museum at Caracas, Venezuela, and author of numerous papers on the ethnology of that country. DR EDWARD PETRI, Professor of Geography and Anthropology in the University of St Petersburg, aged forty-five years. MR JAMES SIMPSON, curator of the anatomical museum of the University of Edinburgh. On October 25th, GRANT ALLEN, author of "Physiological Aesthetics," "The Color Sense," "Evolution of the Idea of God," "Charles Darwin," "The Evolutionist at Large," "Force and Energy," etc.

Indian Canoe Making.—The material being ready, i. e., the bark, the ribs, and the slats, a suitable piece of ground is selected near a supply of water,—one that is level, preferably of clay, into which stakes, when driven, will remain upright and solid. The stakes are about three feet long and are driven into the earth fully eighteen inches. Two are fixed at each end, or where each end of the canoe is to be, and between these pairs two rows are driven corresponding to the "beam" dimensions of the intended vessel, the number depending on whether the canoe is to be one, two, or more fathoms in length. One of two fathoms long has, I think, seven stakes on each side, but the number of stakes also varies with the size of the pieces of bark, for if these are small, additional stakes are employed to support the joints. The stakes, of course, are driven into the ground in the form which the canoe is to take.

If the bark has been cut some months before, it is softened by steeping. Enough pieces are united with overlapping edges, by means of a stout twine, if it may be so called, made from spruce roots. The natural curve is of no assistance to the canoe maker, because the grain of the bark runs crosswise of the canoe; moreover, the inner side of the bark is made the outer side of the work.

The two ends of this bottom strip, having been sharply doubled, are forced between the end stakes, and the united pieces of bark are slightly hollow all along in consequence of this doubling at the ends. A fire having been lighted close by, stones are heated, and these are placed in the hollowed bark which has meanwhile been filled with water. Very soon the bark has been sufficiently steamed to be forced downward between the stakes to the ground. Strips to form the upper portions of the sides are now added by the stitching method, and by the application of pine pitch to all the joints.

The ribs are next put in place. These are usually of cedar, from an inch and a half to two inches in width, and less than a quarter of an inch thick in the middle, lengthwise; toward the ends they become thinner, and throughout their whole length they are thinned on the edges. They are placed from a half to three-quarters of an inch apart, and between them and the bark are inserted slats, of the same material and similarly made, reaching the whole length of the canoe. Together these form almost a complete lining. They not only add stiffness to the boat, but they prevent injury by pressure from within. Gunwale bars are lashed through the bark inside and outside and over the ends of the ribs with spruce bark. The vessel is stiffened by three bars from gunwale to gunwale — one in the middle and one near each end — which are also bound with spruce-root thongs. The bars are light, the central one being about three inches wide and three-eighths of an inch thick in the middle and thinned toward the edges, the other about two inches wide and thinned similarly. Holes are bored in the ends of them to receive the thongs.

DAVID BOYLE.

The Codex Cospianus, so named from its former owner, the Marquis Fernando Cospi (a Bologna patrician of the seventeenth century, who formed a museum which he afterward presented to his native city), has recently been reproduced in facsimile by photochromography at the expense of the Duc de Loubat. The execution of the work is marvelously fine, and reflects great credit on the Danesi publishing house of Rome. The manuscript was first published in colors by Lord Kingsborough in the second volume of his *Antiquities of Mexico*; it is of the so-called pre-Columbian class, by which name are designated such Mexican manuscripts as show no trace of the Spanish conquest, and hence may be older than the Cortez invasion. A part of the codex is painted on the obverse and another part on the reverse only: some parts show pictures on both sides. The whole represents the work of two artists, one of whom performed his task remarkably well. The first part shows symbolic pictures arranged in little squares, thirteen in

each row, which is the number of days in the so-called Mexican week. Most of the squares are occupied by two figures only, and as there are two hundred and sixty squares, Professor Thomas has concluded that "this first part is a *tonalamatl*, applying to the 260-day calendar chart. This reads from left to right, beginning with the lower line and going up, like that of the Vatican codex, while that of the Borgia codex reads from right to left and from bottom upward. The *tonalamatl* of the Codex Cospianus appears to be much more symbolic or mystical than the other two mentioned. The day symbols vary more from the typical, as usual, and, moreover, each has an accompanying symbol, which probably has some reference to the nine 'lords of the night.' These symbols appear to be repeated at every ninth one, though somewhat varied in form." Professor Thomas also believes that, though belonging to the pre-Columbian series, the Cospi codex appears to be of more recent origin than the Codex Borgia, as it introduces the dots and lines in expressing numbers; it is also incomplete, as there are but eleven of the larger legless sitting figures, this number corresponding with no known number in the Mexican time system. As to the signification of the single figures composing the *tonalamatl* or "book of life-signs," the appended Spanish "Description" is almost silent, and in most cases their meaning can only be surmised.

Another part of the codex (pages 9-32) is occupied by pictures of warriors or war gods, monsters, houses or temples, or by a single human figure, all in bright colors, beneath which are numeral signs, chiefly of the numbers six, seven, eight, and nine. These marks seem to give a chronologic character to the whole work, which, when fully understood, will be of great literary and ethnologic interest.

An inscription states that the codex was presented by Valerio Zani to the Marquis Cospi, December 26, 1665. It now belongs to the University Library of Bologna.

A. S. GATSCHET.

Sir Hans Sloane was a born collector, possessing in high degree the habit of accurate observation and recording so necessary for the identification of objects and the preservation of information concerning them. It is well known that his collections and the house in which they were stored, bequeathed to Great Britain, were the nucleus of the British Museum. He was physician to the Duke of Albemarle while the latter was Governor of Jamaica at the close of the seventeenth century. His *History of Jamaica* is a model for explorers and museum collectors. The volumes are in large quarto, with full-size drawings of plants, insects, and birds. The first volume was published in 1707,

and after a lapse of twenty years the second appeared. Sir Hans explains this delay by telling of his collection and the time and labor expended (out of his daily practice as a physician) in arranging, classifying, and labeling it. After listing many thousands of natural history specimens, Sir Hans continues—

Humana, *viz.* Stones of the Kidney and Bladder, Anatomical Preparations, and the like,

Miscellaneous things not comprehended with the foregoing, both

Natural and Artificial,

Things relating to the Customs of Antient Times, or Antiquities, Urns,

Instruments, &c.,

Large Seals,

Pictures, many relating to Natural History,

Mathematical Instruments,

Large Vessels, Handles, and other things made of Agats, Jaspers, Cornelians, Christals, besides many Camei and Seals, excisa, and incisa,

Medals, antient, as Samaritan, Phœnician, and Coins in all Metals,

Books in Miniature or Colours, with fine Drawings of Plants, Insects,

Birds, Quadrupeds, Fishes, and all sorts of natural and artificial Curiosities,

Books of Prints, &c.,

Volumes of Manuscripts, the greatest part of them relating to Physick, and Natural History, Travels, &c.

The etymology of "picaninnies" or, as Sloane spells it, *piganinnies*, is given in his work. It is a corruption of *pequeños niños*, applied to the slave or black babies of Jamaica.

THOMAS WILSON.

Borgiano Mexican Codex—Another very important Nahuatl manuscript has been reproduced for the use of students through the munificence of the Duc de Loubat. The Borgiano codex antedates the conquest of Mexico, and ranks among the very rare codices preserved in Mexico and Europe which are conventionally called pre-Columbian. It excels in size, and consequently in the richness of its pictorial text, all the others known, while in the integrity of its reproduction, including the preservation in facsimile of the original binding, it is equaled only by Vatican codex No. 3773, published also under the direction of the Duc de Loubat in 1896. Linguistically and ethnographically considered, the Borgiano codex is a Nahuatl manuscript from Anahuac; in regard to its contents, it is ritualistic, or, as P. Fabrega defines it, a historical, ritualistic, and astronomical almanac. It therefore differs greatly from the Maya and Zapotec, as well as from

the historical and tributary codices. The codex is the property of the ethnographical museum of the Congregation de Propaganda Fide at Rome, and was called Borgiano because it was once the property of Cardinal Stefano Borgia, who died in 1804. The facsimile reproduction of the original is so perfect that even the most minute details of the binding are represented. The material of the codex consists of a strip of the skin of a Mexican deer, 10 meters in length and 27 centimeters in width, and comprising fourteen pieces of varying length, glued together and prepared to receive the writing by means of a thin coating or sizing of transparent glue. The strip was folded in thirty-nine equal parts, one over the other, in the form of a screen, making a volume 27 centimeters high by $26\frac{1}{2}$ centimeters wide. At a period subsequent to the completion of its pictorial text, the volume was covered with two thin boards, to which the two extremities of the strip were fastened with nails. The first three folded parts of the strip (pp. 74-76) have been slightly scorched. The text is written upon both sides of the skin. Like the Cospianus, the Borgiano codex was published by Lord Kingsborough, but it is hardly necessary to add that the Duc de Loubat's reproduction far exceeds the former in beauty, faithfulness, and freedom from arbitrary additions.

A. S. GATSCHET.

The Dresden Museum.—Dr A. B. Meyer, Director of the Royal Zoölogical, Anthropological, and Ethnographical Museum at Dresden, who recently visited the United States on a special mission from the government of Saxony, for the purpose of inspecting its museums and scientific institutions, calls attention to the omission, from the article on *The Anthropological Museums of Central Europe*, by Dr George A. Dorsey, published in the July, 1899, number of this journal, of reference to the museum under his direction. In a note, dated September 25th last, Dr Meyer says:

"Dr Dorsey, . . . speaking of the anthropological collections of Germany and Austria, mentions only those of Berlin and Vienna, entirely overlooking that of Dresden. I therefore take this opportunity of saying that the Dresden collection is the greatest public anthropological collection in Germany, covering over 2000 skulls, a great series of skeletons, busts, and samples of hair, besides possessing the most complete set of anthropometric instruments I know of."

Under date of October 26th, Dr Meyer supplements his previous note with the following information:

"The cases and desks wherein the anthropologic collection is exhibited are forty meters long, the cases three to four meters high.

There are about 40 skeletons of the races of the earth, chiefly from the East; about 2000 skulls, among them being about 500 Melaneseans, 350 Philippine islanders (40 Negritos, and many deformed, from caves), about 130 criminals and insane, about 600 of the various European races, etc., besides many single bones from different parts of the earth. There are about 500 casts of busts, heads, skulls, brains, and single parts of the body, including 63 specimens of criminals and insane, about 150 of races, 120 of celebrated persons, etc. There are about 250 samples of hair from various races, chiefly Eastern, and about 50 anthropometric instruments of all kinds. The entire collection numbers about 3000 catalogued specimens. There are, besides, 73 osteological specimens of anthropoid apes."

Hindu Superstitions.—Mr M. R. Pedlow gives the following superstitions among Hindus in the Central Provinces, in the *Indian Antiquary* for February:

If sparrows nest in a house-eaves, or any one scribbles on the floor with charcoal, or spiders make webs on the walls, the owner will fall into poverty.

To guard children against the evil eye, their mothers disfigure them by applying lampblack to the eyes or make black spots on their forehead, cheek, or chin; but girls are usually tattooed, not marked in this way.

When children are attacked by the evil eye they show it by their appetite falling off. To remedy this, the mother takes salt, dried chillies, and charcoal and puts them into a pot of water colored with lime and turmeric. This is waved three times over the child, and then spilled on the ground, or the ingredients are cast dry into the fire with some of the child's hair.

Fruit and vegetable gardens and patches of cultivation stand in need of protection from the evil eye, or else their growth will be stunted, even if they are watered daily.

The owners of gardens take the following precaution: A scarecrow or some animal's bones or a whitewashed pot is set up in the plot.

Black or blue threads, or pieces of leather or cowries are also fastened to the necks or legs of the house cattle to avoid the evil eye.

On proof of pregnancy, the wife washes herself profusely, taking much care to avoid the shade of a man falling on her, in the belief that her child, if born, would take after that man in features, though not in mental character.

White Mountain Apache baskets are of many shapes and sizes and are of two varieties—the bowl basket, *tsa*, and the

olla-shape basket, *toose*. The Apache also make basketry water-jars coated inside and outside with mesquite gum. The bowls and ollas are made from willow. I have often seen the women coming from the river almost hidden by loads of willow. When they arrive in camp they strip off the bark and leaves and wrap the osiers into small bundles. The black patterns are made with the *Martynia* pod. It takes a great many of these pods to furnish one pattern, because for even a moderate decoration the only part used is a shred of black from the prong. The only tools used are a butcher-knife and a small awl. When the woman begins to work on a basket she soaks the willows in water to make them pliable, then strips off the fine splints for sewing by putting the end of the switch in her mouth and paring off the filaments with a knife. In this they are so expert that the strips are wonderfully uniform. They then prepare the small osiers on which to work the coil. They punch a hole with the awl for every wrap, and push the filament through, as in threading a needle, pulling it very tight. They piece out the splints very neatly in the bowl basket, and always end on the inside, terminating them with their knives. As soon as the basket is finished it is put into use.

K. T. DODGE.

Dr Fewkes' Researches.—In a letter from Dr J. Walter Fewkes, he states that before going to Tusayan he remained a week in Holbrook, Arizona, to make notes, sketches, and photographs of a collection of two thousand objects of pottery, stone, bone, and shell from the region, formed by Mr F. J. Wattron. He says: "The collection is particularly rich in Homolobi specimens, and the pottery has a few new pictographs. The Sikyatki specimens reveal a most instructive cult which I had long suspected existed in that prehistoric pueblo, but had only fragmentary evidence of it. I hope the collection will find a permanent home in some institution." The enthusiasm with which Dr Fewkes entered his winter's work at the Hopi villages, with all its privations, betokens the true explorer, and no one doubts that the results will prove as valuable as his previous investigations in this field.

WALTER HOUGH.

Anthropology in England.—In comparing the interest taken in anthropology in England and on the continent, *Nature* (October 19th) says: "As an example of the interest that is taken in anthropology on the continent, we call attention to the publication of the free courses of lectures delivered by Prof. E. Morselli, at Turin and Genoa. The title of the publication is 'Antropologia Generale: Lezioni su l'Uomo eondo la Teoria dell' Evoluzione.' When will it be possible for the

English public to hear systematic lectures on anthropology of any kind, free or otherwise?"

In its issue of December 14th, the same journal, commenting on the article by Dr G. A. Dorsey on "The Anthropological Museums of Central Europe," published in the July, 1899, number of the *American Anthropologist*, says: "It is clear that in the United States the study of ethnology is being pursued with the same enthusiasm as in Germany, and that it has succeeded in a similar manner in securing a large measure of popular support. Viewed in the light of these facts, the conditions of things in Great Britain appears doubly deplorable."

The Vai or Vei are the only negroes who possess a true and indigenous writing. They occupy a territory on the confines of Sierra Leone and Liberia. The alphabet is syllabic, and it is the only syllabic alphabet existing in Africa. The first account of this remarkable language was published by Forbes and Norris in 1849, and Koelle also wrote on it in 1849 and 1854. Since then nothing has been published thereon till the recent study of M. M. Delafosse (*Anthropologie*, tome x, 1899, pp. 129, 294). Forbes and Koelle asserted that the alphabet was invented about 1829 or 1839, but Delafosse considers it at least two hundred years old and perhaps older; it is not even certain that it was invented by the Vai themselves. Forbes was also wrong in stating that this alphabet was no longer in use in 1849; as a matter of fact, it is still increasingly employed. Of the 226 characters in the alphabet, 25 resemble Berber consonants in form, and 20 resemble European letters and numerals; but these may be purely superficial resemblances, as the sounds do not correspond. The author does not consider that the Vai alphabet has been derived from these sources.

An Ostiak Custom.—Mr William Tegg relates a custom of the Ostiaks who, desiring to test their women, give to them a handful of hair pulled from a bearskin. If the woman accepts the gift the man may be assured of her honesty and purity, for her belief is that if it were otherwise, the bear, whose hair was pulled, would return at the end of three years and devour her.

THOMAS WILSON.

MINOR NOTES

Dr G. A. DORSEY, curator of anthropology of the Field Columbian Museum, accompanied by an assistant and Rev. H. R. Voth, have returned to Chicago from the Hopi pueblo of Oraibi, Arizona, whence they departed December 6th. The aim of the expedition was to procure additional ethnological material, to witness the approaching

solstice ceremony in order to obtain suggestions for new groups, and to start a systematic and somewhat extended excavation for the purpose of strengthening the Museum's archeological exhibit from Tusayan. The expenses were covered by Mr Stanley R. McCormick of Chicago, who placed \$5000 at the disposal of the Museum in addition to the \$10,000 already expended on the Hopis. The splendid exhibit, which fills three large halls, is attracting many visitors. An account of the Voth collection was given in the *Anthropologist* for April last.

THE UNIVERSITY OF PENNSYLVANIA'S Free Museum of Science and Art at Philadelphia, one of the late Dr William Pepper's cherished hopes, was formally opened on December 20th in the presence of several thousand people. Immediately following the presentation to the board of trustees of the museum, a bronze statue of the late Dr Pepper, the gift of friends, was unveiled. The presentation speech was made by ex-Senator George F. Edmunds, in behalf of the Dr Pepper testimonial committee. In connection with his address, Dr Edmunds was delegated by Mrs Frances Sergeant Pepper, the widow of Dr Pepper, to present to the university trustees, as a memorial to her husband, a gift of \$50,000 to continue the work which Dr Pepper commenced.

THE THIRTEENTH LECTURE COURSE on science and travel at the Field Columbian Museum will be given during March and April. Those of anthropologic interest are: March 24, "Primitive American art with illustrations drawn chiefly from studies in aboriginal games," by Mr Stewart Culin; March 31, "Archeological discoveries on the North Pacific coast of America," by Mr Harlan I. Smith; April 7, "Soyaluna, a Hopi winter solstice ceremony," by Rev. H. R. Voth; April 28, "Indian tribes of the great plains," by Mr James Mooney.

ARCHEOLOGICAL EXPLORATIONS were conducted about Long Island sound and lower Hudson valley during last season by Mr M. Raymond Harrington, in the interest of the American Museum of Natural History. The researches have brought to light a number of Indian burials as well as specimens from shell-heaps. Mr Marshall H. Saville, of the American Museum, left New York in the latter part of December for the purpose of carrying on excavations at the ruins of Xoxo for a season of three months.

SWISS LAKE SKULLS.—M. E. Pitard describes in *Anthropologie* (tome x, 1899, p. 281) three crania from Swiss Lake sites. The first, from Point, with an index of 91.5, belongs to the Rhetian or Dissentis

type, and is remarkably similar to a skull described by M. Verneau from Concise, which that author believed to belong to the bronze age; but M. Pitard asserts that his example is neolithic. The other two crania were found in the same layer at Concise, and are of the bronze age; their indices are 77.6 and 84.6.

THE FOLK-LORE SOCIETY of London, it is stated, has placed on permanent deposit in the Museum of Archeology and Ethnology of Cambridge University a collection consisting of more than 600 objects illustrating the folklore of Mexico. The collection, which was made in Mexico by Prof. Frederick Starr of the University of Chicago, was exhibited last June at a joint meeting of the Folk-Lore Society and the Anthropological Institute.

THE VALUABLE LIBRARY relating to the American Indians collected by the late J. Hammond Trumbull has been acquired by the Watkinson Library at Hartford. Dr Trumbull's manuscript Natick Dictionary, compiled mainly from the various translations of John Eliot, has been presented to the American Antiquarian Society at Worcester, and steps have been taken toward its publication.

THE FOUNDATION of a chair of American Archeology at the University of Berlin by the Duc de Loubat, has given a great impetus to the development of the teaching of anthropology at that university. Recently it has been announced that Dr Adolf Bastian has been made Professor Ordinarius of Ethnology. This has been followed by the announcement of the appointment of Dr Felix von Luschan as Professor (extraordinarius) of Anthropology.

A COMMITTEE, consisting of Mr James E. Scripps, Mr George W. Bates, of Detroit, and Prof. Francis W. Kelsey, of the University of Michigan, was appointed at the annual meeting of the Detroit branch of the Archaeological Institute of America, and was instructed to name a general committee to prepare a memorial to be submitted to the next State legislature on the subject of an archeological survey of Michigan.

THE AMERICAN ARCHÆOLOGIST, formerly *The Antiquarian*, of Columbus, Ohio, has been purchased by *Popular Science* (not *Appleton's Popular Science Monthly*) of New York City, and will be merged into and become a part of the archeological department of that magazine conducted by Mr Warren K. Moorehead, assisted by Messrs J. F. Snyder and A. F. Berlin.

MR GEORGE BYRON GORDON started for Central America, December 5th, on an archeological expedition under the auspices of the

Peabody Museum of Harvard University. Arrangements have been made by which explorations will be renewed at the ruins of Copan, where the Museum has done much important work during previous years.

BY THE WILL of Thomas Armstrong, of Plattsburgh, N. Y., Union College is to receive between \$100,000 and \$150,000. It is required that the college shall endow a chair of sociology and offer a certain number of annual prizes and scholarships for the sons of Clinton County farmers.—*Science*.

THE ARCHEOLOGICAL SOCIETY OF MOSCOW has established "an archeological commission" (i. e., an Historical Manuscripts Commission), according to the *American Historical Review*, the function of which is to print reports on the contents of the lesser public and private archives of Russia.

MRS ELIZABETH A. JOHNSON, of White Rock, Republic county, Kansas, has donated to the Kansas State Historical Society eleven acres of land, embracing the site of the Pawnee Indian village where Capt. Zebulon Montgomery Pike, in 1806, first raised the American flag on Kansas soil.

ANTHROPOLOGICAL INSTITUTE.—At a meeting of the Anthropological Institute of Great Britain and Ireland, held January 30th, Mr C. H. Read was elected president, Mr A. L. Lewis treasurer, and Mr J. L. Myres secretary for the ensuing year.

DR MERTON L. MILLER, author of an interesting and instructive "Preliminary Study of the Pueblo of Taos, New Mexico," Chicago, 1898, has been appointed to an associateship in anthropology in the University of Chicago.

DR DANIEL P. McMILLAN has received an appointment in the Child-study Department recently established in the public schools of Chicago.

MR W. L. H. DUCKWORTH has been appointed to the University lectureship in physical anthropology, Cambridge, England.

THE DIGNITY of a peerage has been conferred on Sir John Lubbock, Bart.



FRANK HAMILTON CUSHING

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MORPHOLOGY OF THE CHINOOK VERB¹

BY JOHN R. SWANTON

INTRODUCTION

Dialects of the Chinook language were spoken along both banks of Columbia river from the Cascades to the sea, and for some distance up the Willamette. They are divided into two sets, Upper and Lower, the former embracing those "from the Cascades to Grey's Bay on the northern bank of the river and to a point a little above Astoria on the southern"; the latter "the Clatsop dialect of the lower Columbia and the Chinook of Shoalwater Bay." These last are now practically extinct.

Horatio Hale, philologist of the Wilkes expedition, 1838-42, made a slight study of this language, the results of which are contained in the section on "Ethnography and Philology," of the reports of that expedition, pages 562-564, as "6. *The Tshinuk Family*." It was based mainly on the Watlala dialect of Upper Chinook. In Vol. II of the *Transactions* of the American Ethnological Society, (pages xxiii-clxxxviii) this account was reprinted

¹ Thesis for the degree of Doctor of Philosophy accepted by the Committee of the Division of American Archeology and Ethnology of Harvard University.

under the title: "*Hall's Indians of North-west America and vocabularies of North America; with an introduction. By Albert Gallatin.*" Prof. Friedrich Müller copied it again into his *Grundriss der Sprachwissenschaft*, 1882, Vol. II, part 1, pages 254-256, adding a few suggestions which were generally correct.

In the summers of 1890 and 1891 Prof. Franz Boas, having learned that the dialects of Lower Chinook were almost extinct, succeeded in collecting a series of *Chinook Texts*, which were published by the Bureau of Ethnology in 1894. From studies of the language in these and the following years Professor Boas outlined its grammar in "Notes on the Chinook Language," published in the *American Anthropologist* for January, 1893 (pp. 55-63). These "outlines," the printed texts, and the manuscript notes made by Professor Boas are the bases of the present study into the morphology of the verb.

Explanations

Figures appended to the examples given refer to the corresponding page and line in the published *Chinook Texts*; thus, 213.19 means that the preceding example will be found in line 19, page 213. *K.* refers to the Katlamat notes, *ex.* after the page number (e. g., 213 *ex.*) indicates that the illustration was taken from notes on that page of Professor Boas' original note-books.

Sounds in the words to which attention is desired are italicized.

I. PHONETIC LAWS

Phonetic changes play such an important part in Chinook that they will be the first subjects for consideration. The appended alphabet is taken from the Introduction to Professor Boas' *Chinook Texts*:

a, e, i, o, u, have their continental sounds (short).

ā, ē, ī, ō, ū, long vowels.

A, E, I, O, U, obscure vowels.

a, i, u, y, e, o,	vowels not articulated but indicated by the position of the mouth.
ä	as in German <i>Bär</i> .
â	<i>aw</i> in <i>law</i> .
ô	<i>o</i> in German <i>voll</i> .
ê	<i>e</i> in <i>bell</i> .
·	separates vowels which do not form diphthongs.
ai	<i>i</i> in <i>island</i> .
au	<i>ow</i> in <i>how</i> .
l	as in English.
ll	very long, slightly palatized by allowing a greater portion of the back of the tongue to touch the palate.
ɭ	posterior palatal <i>l</i> ; the tip of the tongue touches the alveoli of the lower jaw, the back of the tongue is pressed against the hard palate, sonans.
l̥	the same, short and exploded (surd; Lepsius' <i>l</i>).
l̥ɭ	the same, with very great stress of explosion.
q	velar <i>k</i> .
k	English <i>k</i> .
k̥	palatized <i>k</i> (Lepsius' <i>k'</i>) almost <i>kʏ</i> .
kX	might be better defined as a posterior palatal <i>k</i> , between <i>k</i> and <i>k'</i> .
x	as <i>ch</i> in German <i>Bach</i> .
X	<i>x</i> pronounced at posterior border of hard palate.
x̥	palatal <i>x</i> as in German <i>ich</i> .
a, c,	are evidently the same sound and might be written <i>x̥</i> or <i>c̥</i> , both being palatized; <i>c̥</i> (English <i>sch</i>) is pronounced with open teeth, the tongue almost touching the palate immediately behind the alveoli; <i>x̥</i> is modified in the same manner.
d, t } b, p } g, k }	as in English, but surd and sonant are difficult to distinguish.
h	as in English.
y	as in <i>year</i> .
w	as in English.
m	is pronounced with semi-clausure of the nose and with very slight compression of the lips; it partakes, therefore, of the character of <i>b</i> and <i>w</i> .
n	is pronounced with semi-clausure of the nose; it partakes, therefore, of the character of <i>d</i> .

- | | |
|------|--|
| 1 | designates increased stress of articulation. |
| 1 | designates increased stress of articulation due to the elision of <i>q</i> . |
| 2 | is a very deep laryngeal intonation, due to the elision of <i>q</i> . |
| 2, 4 | designate excessive length of vowels, representing approximately the double and fourfold mora. |

In this table it will be observed that several pairs of sounds—*d* and *t*, *b* and *p*, *g* and *k*—are noted as “difficult to distinguish.” This is probably not due to lack of fixity in the sound itself, but is because one Chinook sound is mediate between the pair used by us. In the present paper one or the other of the above pairs of sounds will be used indiscriminately. *b*, however, has been entirely replaced by *p* or *m*. The two remaining unaspirated k-sounds—*k* and *q*—will often be found grammatical equivalents of *k* and *g*, and a similar interrelation prevails between the three aspirates, *x*, *X*, and *x*. The vowels *e* and *i*, *o* and *u* constitute two grammatically interchangeable pairs; *a*, the only vowel outside of these of grammatical significance, will be found more closely related to the *o-u* than to the *e-i* pair.

To summarize, in tabular form, grammatical equivalents are—

<i>a, u</i> (to which <i>a</i> is closely related),	
<i>e, i,</i>	
<i>d, t,</i>	
<i>s, t,</i>	
<i>k, g, k</i> (rarely <i>q</i> and <i>q</i>)	} These will be referred to as “k-sounds.”
<i>q, c</i>	
<i>x, X, x</i> , the “aspirates”	

More important is the relation existing between the sounds *l*, *n*, and *c*. NixE/tcEmaðx, he heard about it (266.21),¹ becomes, for instance, in the third person plural noxo/tcEmaðx, they heard about it (266.4); anix'EaEmð/sx'Em, I fool him (110 ex.), becomes atcuXuimo/sx'Em, he fooled them (178.15), the *l* and *n* changing to *c* (or *i*). Again, agige'/xêm, she called him (157.10), changes

¹ See explanations, p. 200.

to *nuguēxē'ma*, I will call them (153 ex.), and *axEno'tēn*, she helped sing (150.10), to *nuxoēxō'tēn*, they helped sing (260.21). A direct change from *l* to *n* is probably indicated in the words *ō'poł*, night (108.10), and *nopóHEm*, it got dark (23.5). We know, however, that the frequentative suffix *l* becomes *n* under certain conditions. Examples are *aksō'pEnan*, she jumps about (192.13); *nixE'nkōn*, he ran about (127.13); *ōxunē'n*, she was drifting about (223.10); *tcupEnā'nīl*, he jumps much (111 ex. K.); *atēLEl⁴-ē'mEnīl*, he gives him food always (22.12). In such words as *aksō'pEnan* and *ōxunē'n*, it is evident that the use of *n* is governed by the preceding *n*, but no definite rule can be found for the others. The change from *l* or *n* to *ε*, however, is always accompanied by the insertion of an *o* (or *u*) immediately before it.

A slight change which ought to be noted in this connection is the omission of a succeeding *o* or *u* prefix when the above change occurs. We have *atcayā'laX*, he did her to him (118.10), but *atctā'wix*, he did them to them (95.2); *aqē'LElotx*, they gave him to it (267.26), and *aqtā'wītx*, they gave them to them (249.13) where *w* stands for *n*, and the succeeding *o* and *u* are dropped.

An important harmonic law now confronts us which must, indeed, be considered the most important in the language. It has already been indicated in the examples given above,—*nixE'ltēmaōx* and *nōxoē'tēmaōx*, *agigē'lxēm* and *nuguēxē'ma*,—where the insertion of *o* (or *u*) after *x* and *g* follows upon the insertion of an *o* or *u* before those letters. Stated in full, this law dictates that, when the vowel *o* or *u* falls before a *k*-sound, the vowel *a* immediately following is changed to *o*, and unless the *k*-sound is one of a group of stem consonants, any other sound has *o* inserted before it. In *nōxoē'tēmaōx*, for instance, *x* preceded by *o* is immediately followed by a new *o* inserted before *ε*. The same is true of *g* in *nuguēxē'ma*. In these cases the action of the law is somewhat obscured by the change of *l* to *ε*, but *ōguē'pXati* (bark-tree, 125 ex.), *nōxokjōē'nēyak* (bundles, 66.22), and *ō²ō'kwil* (woman, 60.1), will bring it out clearly. *atLgē'pXate*, alder country

(340 ex.), contains the same element -gêpXa as *ogué'pXati*, the only real difference being in the initial vowel, and we find conformably to our law that a second *o* appears between *g*, the *k*-sound, and *e*. Here the *k*-sound is followed by *e*: in the next example, *noxokjœ'neyak*, from *inixkj'ë'niak*, the second *o* is inserted between two consonants, *x* and *k*, *x* being here the reflexive prefix. This word also illustrates the possibility of two successive insertions, for we have one between *x* and *k*, and a second between *kj* and *ë*. The third example we have given, *ø'ø'kxil*, woman, illustrates this still further, besides giving an example of the application of the law to the vowel *a*. *L'a'gil* is a neuter form of the same word. *o* being substituted for *L*, *a* is then changed to *ø*, and a second *ø* is inserted after *g*. Other examples of the displacement of *a* by *ø* are, *tqagê'lx'te* (firebrands, 43 ex. K.), singular, *øqogué'lx'te* (43 ex. K.); *Lk'asks* (child, 5 ex.), *uk'ø'cke* (girl, 108.2). Further cases of insertion are *nā'xlXa* (she begins to burn, 108.16), *nø'xøLXa* (they burn, 108.15); *nē'Xkō* (he went home, 114.21), *nø'xōkō* (they went home, 118.25); *ø'ktexam* (he sang, 235.12), *ø'køtcxEm* (they sang, 167.4). Successive changes under proper conditions may extend to the end of the word. *lgā'xa*, her child (neuter; 177.6), becomes, for instance, *ugø'Xo* in the feminine (146.9). This word and *ø'ø'knil* illustrate the possibility of changes in the stem where the *k*-sounds are succeeded by *a* or *e*. With a group of consonants in the stem the case is different. *atclē'lukē* (he spears him, 183.5), *atcø'ktctamit* (he roasts her, 94.4), *atci'lukct* (he sees it, 184.18), preserve their stems -*ke*, -*ktct*, -*ket*, intact, although *k* is immediately preceded by *u*. The converse of the law is illustrated sufficiently by examples already given, *ø'køtcxEm*, *nø'xøLxa*, *uk'ø'cke*, *øqogué'lx'te*, where the changes stop at *L*, *L*, *e*, and *e*. Its great importance, and the necessity of always bearing it in mind, are shown by the difference between *L'a'gil* and *ø'ø'kuil*, *tqagê'lx'te* and *øqogué'lx'te*, *lgā'xa* and *ugø'xō*. In operation it is practically infallible, and the predilection of the Chinook for sounds of the *k*-group makes it an ever present factor.

Directly connected with this phenomenon, although not under the same law, are certain usages and tendencies also involving *o* and the *k*-sounds. The regular objective prefix for the third person plural of a transitive verb and the corresponding subjective prefix of an intransitive verb, ordinarily *t*, become *o* when followed by a *k*-sound. Examples illustrating the normal use of *t* are, *agē'tukc*, she saw them (75.22), *atci'tax*, he did them (9.5), *nā'ōwil*, I catch them; *ā'tgELx*, they went down to the beach (133.18), *atgē'tetolax*, they went down river (266.10); but compare with these *aqugō'-om*, they reached them (89.7); *atcō'xōx*, he did them (46.18); *acgō'Xuina*, they (two) placed them in the ground (30.12); *nugō'goimx*, they said (266.5); *nogolā'yax*, they move (245.9); *nuxoēxō'tenema*, they helped sing (260.21).

Again, the third person plural pronominal prefix of the intransitive verb before *k*, *g*, *k'*, or *q* infixes a syllable *gō*. *Nē'kim*, he said (107.1), becomes *nugō'k'oim*, they said (270.7); *nīgē'qxamt*, he looked (191.17), *nugugē'qxamt*, they looked (62.1); *amcklē'-watck*, you (pl.) paddle (227.12), *nuguklē'-watck*, they paddled (128.25); *lxgē'staq;ōama*, we will make war (145 ex.), *nugugē'-staq;ōamx*, they go to war (270.1).

When there are two objective prefixes, the second in this person and number is always *o*. This is partly a necessary consequence of the above rules, because a second object never occurs unless followed by a modifying prefix which can only be *k*, *x*, *gEL*, *L*, or *n*. If *t* falls before *k*, *x*, or *gEL*, it would therefore change to *o* in obedience to the rule governing in first objects. Before *L* or *n*, *t* also changes to *o*, and the *L* or *n* gives place to *o* or *i*; *atcaLE'lqamx*, he shouted at him (*lit.*, he sent her forth to it) 164.26, *atcawē'qamx*, he shouted (*lit.*, he sent her forth to them) 164.1. The *w* is of no significance. *Atcayā'lax*, he did her to him (118.10), *atctā'wix*, he did them to them (95.2); *aqē'LElotx*, they gave him to it (267.26); *aqtā'wix*, they gave them to them (249.13) illustrate the same, *w* simply standing for *u*. This phenomenon will recall cases already treated when

we first spoke of the change of *l* or *n* to *e*: *agige'lxèm*, she called him (157.10), *nugu'xè'ma*, I will call them. But there the change to *e* seemed due to the preceding *o*, while in the cases now under consideration the change to *o* seems to be brought about by that of *l* to *e*. It may therefore be stated as a rule that, among the prefixes, *ll* must be changed to *oe*.

Besides transformations governed by laws, there are certain marked tendencies to the insertion of *o* after a final *k*-sound: *alxu'w'tcatk*, he hears (235.6), *amxau'w'tcatko*, you hear (229.4); *atci'o'latck*, he lifted him (74.23), *amiola'tcgø*, you lift him (225.11); *yukj'o'niak*, he is hanging (302 ex.), *aniukj'o'niakø*, I hang him (302 ex.). The suffix *-ck* may always take a terminal *o*. When these *k*-sounds are followed by some suffix, an *o* is still more likely to be inserted: *tgE'tciqLk*, they are crosswise (278 ex.), *alXtcø'qigux*, it is usually across (238.6). Between a *k*-sound and *m*, however, *a* is used instead of *o*. A favorite combination is the use of a *k*-sound followed by *o* and immediately preceded by *a*. The future suffix *ø*, in *Lgiä'xø* (it will make him, 38.16), becomes, for instance, *a*, *-tkcauw'xa* (they will make them (2) to them, 35 ex.)—when for any reason the preceding *a* is lost. Other examples of a preceding *a* are *Lpaqxø-ikc* (shags, 89.2), *laxnikLä'ko-it* (he cannot do it, 204.13), *nicilgä'qxø-it* (he lay on his back, 147.5). There is also a suffix *-ako*. And as we have found *ø* occurring after *k*-sounds not preceded by *a*, so we also find *a* preceding the same variety of sounds not followed by *ø*, in places where we should regularly expect something else. Such are contained in *atca'qc*, he bit her (146.9), *aqtä'xc*, they cut them (96.12), *ayäqsti*, he had enough (46.17). The significance of these changes will become clear when we approach the subject of verbal prefixes.

Finally we have to deal with a set of changes closely connected with the use of the accent. When the accent preceding a velar or palatal *k* is changed over so as to stand after it, the full sound of the velar or palatal frequently disappears, leaving only a

slight catch, *i*, or an increased stress in pronouncing the consonant preceding, *l*, to mark its omission: *lā'gauwilqt*, his blood (204.16), *lā'wulqt*, blood (204.16); *olxā'qralptckix*, our fire (73.21), *ō'ō'leptckix*, fire (37.20); *ē'qrel*, creek (115.10), *t/a'LEma*, creeks (93.1). This rule by no means covers all cases, and especially cases where the omitted velar is in the penultimate syllable. There is a marked disinclination to accent the ultima; *ē'qramstk*, single spit (50 voc.) becomes in the possessive not *tga'ā'mstk* (my single spit, 332 ex.), or *tga'qramstk*, but *tga'ramstk*. And so with *ā'krōt*, root (199 ex.), *tga'rat*, my root; *ā'qrot*, fish weir (217 ex.), *uya'at*, his fish weir (217 ex.). A rule covering most of these exceptions is the following: When more than one sound appears before the velar, and the velar is in the penultimate syllable, the velar may be omitted without a change of accent. All that can be stated with unqualified certainty is that where *q* is variable, in those forms in which it is retained, the accent precedes.

e, *i*, and *ə* on receiving the accent are frequently strengthened to *a*; *i* and *ə* sometimes to *ē*: *l'ckjalē*, basket (321 ex.), *l'ckj'ald'yukc*, baskets (321 ex.); *icā'yim*, grizzly bear (61.3), *icayā'mukc*, grizzly bears (145.16); *alē'gēla-itx*, it was in a canoe (226.25), *atagā'la-it*, they were in a canoe (133.5); *itcā'leXamitk*, her bed (76.8), *ilemā'tk*, a bed (177.17); *ataxē'lgilx*, she burns (193.14), *LElxe't'lgē'lxac*, we make fire with it (11.25); *aniō'lēl*, I bend it (114 ex.), *ixel'ēl*, he becomes a little bent (114 ex.). *a* is frequently inserted to carry the accent, especially in verbs where the accent is thrown forward of the verbal prefix *ə*. Instead of *atc'ax* (he did him) we find *atcā'yax*; for *alga'mlax* (it did her to you), *alga-mā'lax*. The following words insert such a vowel into the stem: *mLōpia'lXa*, you will gather it (43.4), *agiupā'yaLX*, she gathered him (42.25); *atciū'qona-itx*, he put him on him (165.4), *atciūqo-ā'na-it*, he put him on him (165.3); *luXunē'n*, it floated about (272.23), *aluxuā'niteck*, it floated (47.19); *tia'kunat*, its spring salmon (92.12), *iguā'nat*, spring salmon (92.11). The insertion of *ə* to carry the accent is also common.

II. THE PARTS OF SPEECH

An adequate comprehension of one part of speech requires some knowledge of the others. I shall therefore introduce the main theme with a brief chapter on the other elements that make up the Chinook language.

Substantives are classed under five genders, indicated by the following prefixes: masculine *i*-, feminine *o*-, neuter *L*-, dual *c*-, plural *t*-. These prefixes are pronominal. Thus we have from the stem *-kanax* (chief), *ikā'nax*, *he* (more strictly *him*) chief, or male chief (29.4); *okō'nax*, *she* (strictly *her*) chief, or chieftainess (146.20); *Lkā'nax*, *it* chief, chief of undefined gender (29.18); *ikānā'ximct*, *them* chiefs (194.2); from the stem *-golē'LEXEmk* (person), *igōlē'LEXEmk*, male person (234.1); *golē'LEXEmk*, an indefinite person (226.8); *cgolē'LEXEmk*, *them* two persons (117.6). The language therefore possesses three numbers as well, singular, dual, and plural. As used at the time when the materials for this language were collected, the provinces of these genders were by no means clearly defined. It is not surprising to find such words as *igō'ma*, arrow; *i'maL*, bay; *i'lē'e*, earth, which in English would be neuter, assigned to the masculine, or *ō'cgan*, bucket, *oitē'waLXte*, bailer, *otsō'oitk*, dip-net, to the feminine. The classification of objects with total disregard for consistency is a familiar enough phenomenon in all languages. But in Chinook the same form may be used both in singular and in plural, singular prefixes appearing in the plural, dual or plural in the singular. Words which convey no idea of duality or plurality to us are in one or the other of these genders, and *vice versa*, or the same noun may have plural forms in two different genders, while *-kt*, the regular plural suffix, occurs after the prefix *L*- almost as frequently as after *t*-. Thus, the plural of *ikān'm*, canoe (157.15), is *okun'm* (133.6); of *ōpā'utē*, crab-apple (voc. 32), *Lpā'utē*, crab-apples (voc. 32); of *ētē'latē* (a kind of berry; 67 ex. K.) also *ātē'latē*; of *igō'matk*, arrowpoint (218.22), *igomā'tgema*

(218.24). *t'ó1*, house (67.9); *tqstó'totx'*, aspidium root (331 ex.); *tqamila'leq*, beach (75.3), are plural: *cka'kolē*, eel; *c'óla'l*, ground-hog blanket (177.16); *ceqoala'la*, gun (247 ex.), dual. The forms ending in *-ma*, like *igomá'tgēma*, are, however, readily explained, *-ma* being the distributive suffix. The arrowpoints are not conceived of as one group of so many points, but each point is taken by itself, the *i* referring to one at a time. The suffix for the true plural is, as we have said, *-kc*, which, with few exceptions, is found only with the pronominal prefixes *t-* or *l-*. *-kc* seems to have originally indicated a plurality of human beings. From some plural forms *tEpō'te*, arms (27.7); *tkEmēlā'plix'*, armpits (213.9); *t'á'na*, beavers (99 ex.); *t'E'tsikin*, chipmunks (58 ex.); *tE'cgan*, boards (38.9), both *-kc* and *ma* are absent.

In spite of all exceptions indicated, the use of *i* and *o* as distinguishing masculine and feminine objects is fairly amenable to rule, and much the same may be said of *e-* and *t-*, especially in words like *ekulkuló'l*, double-pointed harpoon (109.2); *e'qxo*, double-pointed arrow (192.21); *tE'pco*, grass (191.17); *kte'ma*, dentalia (248.22); but the use of *l-*, which we have called the neuter prefix, is more obscure. It seems primarily and perhaps originally to have had an indefinite function, *lkj'äckc*, child, being a sort of noncommittal form of *ikj'äckc*, boy, or *ókj'ó'ckc*, girl. In the plural it occurs more frequently with the suffix *-ma* than with *-kc* which associates it with the distributive. Not infrequently a substantive may take two plurals, one in *t* and one in *l*. To *ó'npitc*, chicken-hawk (192.12), we find the plurals *tEnpE'tckc* (115 ex.) and *lEnpE'tckc* (89.17), both having the regular plural suffix; *ik-i'kala*, husband (16.10), has *tEnE'mckc* (138.6) and *lEnE'mckc* (165 ex.).

Some few substantives have a plural prefix *na-*: *nate'tanue*, Indians (234.12), *nauá'itk*, nets (95.23), and some names of places a locative prefix *na-* (at), *Nakótj'á't*, (271.2), *Nayá'aqctaōwe* (229.20). Words indicating relationship have a special plural suffix *-nana*: *e'qsiX*, father-in-law (24.3), *tE'qsiX'nana*, fathers-in-law

(104 ex. K.); ǝ'qxamǝ, female cousin (27 voc.), LqxaugEnana, cousins (111 ex. K.). The substantival suffix *-k* is used to indicate the point of anything: igǝ'ma, arrow for birds (218.17), igǝ'matǝ, arrowpoint (218.22), and *-t* to mark that an object is of wood, Liǝ'xētēqlk^ut, his cross-sticks (313 ex.), omǝ'etewaLxti, thy bailer (118.2). The plurals of substantives not infrequently have different stems from the singular: ik'i'kala, husband (253.17), tEnE'mckc, husbands (138.6); Lk'a'ckc, child (256.13), tkǝ'cocinikc, children (138.9). A long list of animal names have duplicated stems, as iq'ǝ'sqǝs, blue-jay (28.16), i'pEnpEn, badger (62.14), iqoǝ'lqoǝl, owl (61.13). Names of birds are almost all onomatopoeic.

The idea of possession plays an important part in Chinook, and since the possessive prefixes are likely to appear frequently it will be best to append a complete list:

	M.	F.	N.	D.	P.
my	itci'-	ǝgu'-	lge'-	ege'-	tge'-
thy	imǝ'-	ǝmǝ'-	temǝ'-	cemǝ'-	tmǝ'-
his	iǝ'-	ǝyǝ'-	liǝ'-	ciǝ'-	tiǝ'-
her	itcǝ'-	ǝgǝ'-	lǝǝ'-	egǝ'-	tgǝ'-
its	ilǝ'-	ǝliǝ'-	lǝ'-	etiǝ'-	tiǝ'-
our two selves' (incl.)	itxǝ'-	ǝtxǝ'-	ltxǝ'-	ctxǝ'-	txǝ'-
our two selves' (excl.)	intǝ'-	ǝntǝ'-	[lntǝ'-]	[cntǝ'-]	ntǝ'-
your two selves'	imtǝ'-	ǝmtǝ'-	temtǝ'-	[emtǝ'-]	tmtǝ'-
their two selves'	ictǝ'-	uctǝ'-	lctǝ'-	[ctǝ'-]	tctǝ'-
our (incl.)	ilxǝ'-	ulxǝ'-	[leilxǝ'-]	cilxǝ'-	tlxǝ'-
our (excl.)	intcǝ'-	untcǝ'-	lntcǝ'-	[cintcǝ'-]	ntcǝ'-
your	imcǝ'-	umcǝ'-	lemcǝ'-	[emcǝ'-]	tmcǝ'-
their	itǝ'-	utǝ'-	lgǝ'-	ctǝ'-	tgǝ'-

The bracketed forms are those of which no examples have actually been found, although there is little room for doubt concerning them. The initial sound, it will be observed, is identical, in each case, with the substantival pronominal prefix for the

corresponding gender, and we shall find that, except in the first person singular and third person singular feminine, the sounds following are identical with the objective pronominal prefix in the verb. A *k*-sound immediately following the possessive prefix is aspirated, and, when the accent is thrown farther back, certain slight euphonic changes are introduced such as have been already treated.

Excepting demonstratives and verbs, the remaining parts of speech present few difficult problems. In the following chapter we shall show that adjectives are morphologically identical with the continuative form of the intransitive verb. They agree in gender with the nouns upon which they depend. Numerals above one take the suffix *-ks* when they indicate human beings. Cardinal numerals above the first are otherwise invariable. *ēXt*, one, possesses gender and has a peculiar form, *ē'Xat*, for human beings. The cardinal adverb is formed by the use of a suffix *-i*, but the ordinal adverb also takes a possessive prefix *ila-*. The numeral three will illustrate these changes well, as follows: cardinal, *Lōn* (76.10); with human beings, *aLō'niks* (196.1); ordinal (with feminine substantive), *aLā'Lōn* (211.20); cardinal adverb, *Lō'nī*, three times (23.18); ordinal adverb, *ila'Lōnī*, the third time (191.10). Ordinals (very naturally) agree with the substantives on which they depend. *iā'nēwa*, first, seems to be from an entirely different stem from the cardinal, one. Independent personal pronouns are formed by suffixing *-aika* to the objective pronominal prefixes of the first and second persons in all numbers, *-axka* to the third person singular and dual, *-acka* to the third person plural. The interrogative pronoun *ē'kta* is identical with the substantive for "thing," and is treated accordingly. When there is no interrogative pronoun or adverb, interrogation is indicated by the particle *na*. Demonstratives have not been thoroughly investigated, but four complete series are known to exist, marking various degrees of nearness in time or place and of visibility or invisibility. They incorporate the pronominal prefixes and are

introduced either by *q* or *x*. Those introduced by *q* indicate greater remoteness than the others. When standing for human beings a suffix *ε* appears: *qō'ta*, those things (22.11), *qō'tac*, those persons (27.15). Adverbs are usually invariable. *gō* is the sole preposition covering all kinds of ideas of location, such as are expressed by our prepositions *at*, *to*, *in*, *on*, etc. *Ma'nix*, when; *qē*—*pō*, if; *qē'wa*, if, are the only important subordinate conjunctions. The use of *ta'kε*, then, and *a'lta*, now, to introduce sentences is exceedingly common. There are three coördinate conjunctions, *kja*, *ka*, *cka*. The first of these connects substantives, and *cka* seems to have an introductory function. All are translated by our coördinate conjunction *and*. Interjections and exclamatory particles are numerous.

III. TENSE

In common with other American languages Chinook sharply distinguishes between transitive and intransitive verbs. This division becomes of especial importance when we take up the subject of tense, because three of the five tenses—*aōrist* of the transitive, transitional, continuative, future, and perfect—are bounded by the line between intransitive and transitive.

Morphologically considered the *aōrist* of the transitive and the transitional are one and the same tense, both being marked by a prefix *a*. Before vowels, or, in other words, before the pronominal prefixes of the third person singular masculine and feminine and the third person plural, this prefix changes to *n* except when the pronoun is followed by *a* or *o*. In this case the masculine form is *aya-* or *ayo-*, the third person plural, *atgε*. Examples of the regular use of *n* are *nē'xax*, he becomes (22.5), *nā'xax*, she becomes (43.15), *nō'xōx*, they become (28.8); of the exception, *a'yo*, he went (114.21), *nō'ya*, she went (114.20), *a'tgi*, they went (116.25). The *aōrist* of the transitive is used so continually that no especial illustrations need be introduced. The transitional is, in fact, merely divided from the *aōrist* of the transitive

to which it normally belongs for purposes of contrast with the continuative, a wholly intransitive tense. This is morphologically distinguished by the absence of the *a*-ristic sign. In use the transitional represents an action as completed within a limited time, the continuative as extending for an undefined time, either in the present or the past. The latter is similar to our participle in *-ing* with an auxiliary: she is singing, he was walking. The verbs *nē'xax* and *ikē'x* illustrate its use excellently, *nē'xax* meaning he became, *ikē'x*, he was. *alxomā'yol*, we drifted (149 ex.); *nē'lxam*, he came down to the beach (235.14); *ayō'ko*, he flew (157.24), are other examples of the transitional; *lxomā'yol*, we are (or were) drifting (149 ex.); *ē'lxam*, he is coming down to the beach (235.14); *Lōc*, it is there (167.8), of the continuative. The continuative is a purely intransitive tense, because in transitive verbs the object limits the action in such manner as to preclude the possibility of its occurrence.

Adjectives are morphologically identical with this latter form of the verb, *iō'lqtē*, "long," for instance, being equally well rendered, he is long, and the resemblance becomes striking when we consider the third person plural, *tge'lqtē*, since the substitution of *gē-* for *a-* in this connection is an especial feature of intransitive verbs. The substantive also presents striking analogies. Recurring to the examples used in the section on the parts of speech it will be seen that *ikā'nax* might be rendered "he is a chief," *lkā'nax*, "it is a chief," *tkanā'ximct*, "they are chiefs," *cgoLē'lEXEmk*, "they two are persons." Only the feminine prefix *a-*, *okō'nax*, presents difficulties; but when we actually find *mkā'nax*, you chief or you are a chief (218.1), and *ngoLē'lEXEmk*, I am a person (68.2), that objection is largely discounted. In Upper Chinook the feminine *a* persists in nouns.

The future tense is regularly marked by a suffix *-a*, which, antithetically to the prefix *a-*, is always the last sound in the verb. After *q* or *x*, *-a* in conformity with the phonetic tendency noted in section I usually changes to *o*: *aniā'wa^s*, I killed him (114.7),

tgEmuwa'⁸o, they will kill you (66.17); a'mtax, you do them (17.2), tcinlā'xo, he will do them for me (70.6). After a final *a* or *ē* *y* is inserted before adding the tense suffix; atcō'pEna, he jumped (72.12), tcopEnā'ya, he will jump (186.23); aLktō'guaxē, they swept them (111.10), mcktuguē'xēya, you will sweep them (130.8). The reason for this is evident. -aya also becomes the future termination when preceded by certain consonants, especially *x* and *m*: atcixē'lotcx, he looks at him (25.3), tcinxēlā'tcaxaya, he shall look at me (25.15); antō'kcEm, I dried (salmon) (336 ex.), antukcEmō'ya, I shall dry (salmon) (336 ex.).

The perfect tense is indicated by a suffix -t, the aoristic prefix, as in the future, being absent: oxō'Lxa, it had burnt (166.10); ō'Lxa, she has come down to the beach (107.9); sā'npōt, she had closed her eyes (47.18); Lō'yamt, it had arrived (22.17); iō'mEqtit, he had died (238.14); ē'x'LXa-ut, he was angry (96.8); niā'qci, I have him held in the mouth (183 ex.); qjoā'p tcina'xt, he has got near me (116 ex.). It is thus found indifferently with transitive or intransitive verbs.

IV. PRONOMINAL PREFIXES

Besides a few slight changes in the aoristic sign, already noted, the difference between transitive and intransitive verbs is marked morphologically by their pronominal prefixes. The objective pronominal prefixes of the transitive, agreeably to a well-known law prevailing among American languages, are identical with the intransitive subjective prefixes. These are the following:

	SING.		DUAL	PLURAL
1st Person	n-	{ inclusive exclusive	tx-	lx-
2d Person	m-		nt-	ntc-
			mt-	mc-
3d Person	{ MASC. i- FEM. ē- NEUTER t-	{	c- (or ct-)	t-

With two exceptions the subjective prefixes are identical with the objective. In the third person singular masculine, however,

the subjective prefix is *tc-* and in the feminine *g* (or *k*). Thus we have *aŕktô'cgam*, they took them (248.2), *aŕkLâ'wa¹*, it killed it, but *aŕciô'cgam*, *agiô'cam*, he took him, she took him (42 ex., 74.2); *atcâ'wa¹*, *agâ'wa¹*, he killed her, she killed her (186.25, 176.9). The third person dual is always *c-* and never *ct-* as sometimes in the objective. We also have to add an indefinite subjective prefix *g*, they did, someone did; *agâ'wa¹*, they killed her, or she is killed (99.14). The feminine objective prefix disappears before *o* and *a*. After subjective prefixes in the dual, plural, or third person neuter singular, a *g* or *k* is inserted, *atktô'cgam*, *aŕkLâ'wa¹*; and in the pronominal combinations I- thee, I you 2, I- you (pl.), the rule for subjective prefixes does not hold, *ayam-ô'cgam*, *ayamtô'cgam*, *ayamcô'cgam* appearing instead of *anamô'cgam*, *anamtô'cgam*, *anamcô'cgam*. We also find *agm-*, we 2 (exclusive), thee, or we (pl.) (exclusive), thee; *agmt*, we 2 you 2- or we (pl.), you 2; *agmc-*, we 2, you (pl.), or we (pl.), you (pl.), instead of *antkm-*, *antekm-*; *antkmt-*, *antckmt*; *antkmc-*, *antckmc-*. The use of pronominal prefixes in the intransitive presents few peculiarities. *a-*, the aôristic prefix, as noted in the chapter preceding, regularly changes to *n-* in the third person singular, masculine and feminine, and in the third person plural. In the third person plural before *o*, *ato-*, which we should naturally look for, is replaced by *atgE'*, *-atgE'tctolax*, they go up river (266.10), *o* being weakened to *E*, seemingly, and a *g* inserted between it and the pronominal prefix.¹ This is analogous to the use of *g* between pronominal prefixes in the transitive.

In addition to its regular subjective and objective prefixes the transitive verb may take a third, a second objective. This is morphologically identical with the corresponding first objective prefix and is always followed by some other prefix having the force of a preposition: *atctâ'lot*, he gave them to her (66.21), *aqt¹rot*, they won them from him (30.18), *aqai¹gE'kxol*, they put her on him (48.26), *atcaŕE¹nqa'na-it*, he threw her into it (172.23).

¹ See pages 212, 213.

The use of this object with *l*- nearly corresponds to that of our indirect object, and the fact, which we shall again refer to, that *l*-, unlike the other prepositional prefixes, does not displace the following prefix *o*-, may indicate that some distinction is drawn between it and them. It is to be noted that when the subject of a transitive verb is in the first person singular and its second object in the second person singular, the subjective pronominal prefix seems to be omitted: *iamelō'ta*, I will give him to thee (216.17), *tamelō'ta*, I will give them to thee (15 ex.), *camkēmō'ktia*, I will pay them 2 to thee (24.11).

Connected to the transitive with two objects by the closest possible ties is a form which we shall have to call half-transitive. It is identical morphologically with the intransitive plus a second pronominal prefix, and, as the subject of the intransitive is morphologically identical with the object of the transitive, so the subject and object of the half-transitive are morphologically identical with the two objects of the transitive. Some examples will illustrate: *anl'ltckō*, I oil him (163 ex.), means literally, I it (i. e., oil) on him put; *alanxe'ltcgō*, I oil myself, it (oil) to-myself is put (143 ex.). The important point with the Chinook being the object of the action and not who performed it, the pronominal subjective prefix is dropped in the second case. A similar explanation may be made for the change from *atcale'lqamx*, he shouts at it (*lit.*, he sends her (the cry) forth to it; 164.26), to *nalxe'lqamx*, it shouted (*lit.*, she went forth from it; 48.15). In these cases the omitted subject is identical with the second object, and that identity is indicated by the reflexive prefix *x*-: *alanxe'ltcgō* is thus the same as *anlane'ltcgō*, *nalxe'lqamx* as *algale'lqamx*, where *n*- and *l*- refer respectively to the same person. Although it thus happens that a large proportion of half-transitives are reflexive, the reflexive prefix is by no means essential. Sometimes it would seem that the subject is a matter of too little importance to require mention, and in such cases it might usually be rendered by the indefinite prefix *q*-

someone. The subject of the half-transitive is really the mediate agent, the real agent being unexpressed. This becomes apparent in verbs employing the passive suffix *-x'it*, which are always intransitive or half-transitive. *atcagē'lltcim* (47.18) means that he, a man, struck her, a diving bird: but *ayagēlteē'mēx'it* (157.1) means that he, a stone (which word is masculine), was struck by some indefinite agent against her. A similar explanation will hold for *ninēlgā'x'it*, he is stuck to me (42 ex.), and *nayin'uyā'xit*, he is choked with a feminine object (198 ex.). But the same is true of many verbs without *-x'it*: *ae'laot*, she has been (fastened) to him (261.15), *ninē'ntctXōm*, I get breathless (96 ex.), *ayugō'ōm*, he reached them (166.6), *ayaē'taql*, he left her (212.23), although in some cases the exact interpretation is a difficult matter.

In combination the pronominal prefixes of the half-transitive present few anomalies. The object, like the second object in the transitive, is inserted after the regular subjective form for the intransitive without any sounds between. Two masculine prefixes, *i-i*, coalesce into *ē* and two feminines into *a*. The masculine singular subject and feminine object combine in the transitional as *aya*, the aoristic prefix obeying the rule for cases where the pronominal subject is followed by *a* or *o*: *ayaē'taql*, he left her (187.2). In the third person plural the objective prefix is always *o*, in agreement with the laws laid down in our first section. Thus we have *atoē'taql*, they left them (98.21), *ayugōtā'ōm*, he met them (164.12), *ayō'kuiya*, he went to get them (95.12). In this peculiarity the object of the half-transitive again agrees with the second object of the transitive. The insertion of a new prefix also obviates the necessity of changing *i* to *a* as subject of the third person plural: *atē'xLxō*, he hung them over his shoulders (109.22), *atē'nxLxō*, I hang them over my shoulders (337 ex.).

V. PREFIXES MODIFYING THE PRONOMINAL OBJECTS

Following the pronominal prefixes in both transitive and intransitive, and always present, where no other sound occurs

between those prefixes and the stem, is a rather problematic prefix *a-*: atciō'cgam, he took him (135.9); ayō'ko, he flew (157.24). It would seem to convey a general sense of motion, more especially of motion *from* the subject of the action.

This is partially suggested by the fact that it is always replaced in presence of the prefix *t-*, toward the speaker. "I carried him," for instance, is anā'yak' (107 ex.), but "I brought him," ā'nisk' (105 ex.), *u-* being directly replaced by *t-*. If we suppose that the general idea of motion in the speaker's mind is *away from* himself, then *a-* would become the common prefix of motion, *t-* being employed only in cases where he wishes to specify a movement in the opposite direction. At any rate the wide use of *a-* indicates some very general meaning. We must take it as the starting-point in treating of post-pronominal prefixes. It is the primordial element, as it were, which yields to others by a certain kind of replacement.

Besides its regular occurrence after the direct object of the transitive and the subject of the intransitive, it is usually, though not always, retained after the prepositional prefix *t-*: atcayā'lōt he gave her to him (65.16), atciā'lax, he did him to her (9.14), ama-ilō'ktegutē, you push her into him (130.14), and occasionally with others, especially when the verb stem is short. In atcē'lḡax, he did him on it (153.17), and na-igō'tXu-it, she stood on him (109 ex.), we have two examples after the prefix *g-*. In conformity with the phonetic tendency already noted, *o*—as in the word atcē'lḡax just given—often changes to *a* before *q*, *k*, and *x*.

The first replacement to be considered, and one which is closely connected with the subject of pronominal prefixes also, is that by *ki-* (or *k-*). When this takes the place of *o* in a transitive verb having two objects, one of these objects is omitted; when it occurs in a transitive verb with one object, the verb becomes intransitive. It is, in short, a device for the free omission of objects.

In the first case it is usually the first object which passes out. Thus *atcLÉ'lkc*, he speared it into him (183.5), becomes *atcÉ'lkic*, he speared him (133.6); *aqilgEmə'ktiX*, they pay him to it (261.23), *atcagEmEg'i'ktē*, he paid her (161.9). A few verbs lose the second object; *agiā'lətk*, she put him into her (43.22), *agē'lgitk*, she put him into (13.9). Examples of a change from transitive to intransitive are *atcā'yəL*, he won him (48.18), *nē'k'itL*, he won (29.4); *aLkElə'kctx*, it looked at it (256.8), *aLÉ'kikct*, it looked (218.9); *atciā'qxamt*, he looked at him (30.6), *nigē'qxamt*, he looked (191.17); *aksaxu'tō*, she gave birth to two (25.26), *naExā'tō*, she gave birth (25.25). This prefix is employed in the formation of participles and even substantives; *gitā'kikElal*, the seeing ones (198.20), *itci'kēqamt*, my seeing (130.3), *tēipala'wul*, word (98 ex.), from the verb stems *-kEl(kEl)*, to see; *-qamt*, to see; *-palawul*, to speak a language. A few verbs have *kjē* instead of *ki*: *akLə'xtkin*, she searched for it (12.5), *naEx'ē'xtkin*, she searched, also *itā'k'ē-tenax*, what has been killed (245.22). Whether there is a different meaning involved is doubtful.

A still more important prefix displacing *a* is the reflexive prefix *x*. In treating of half-transitive verbs some incidental remarks were made about this, and, in fact, it is difficult to avoid encountering it at every turn. It occurs in five different situations, which may be placed in two groups: first, cases where the reflexive is placed after the subject of the intransitive, the object of the transitive, and the subject of the half-transitive; second, where it is placed after the second object of the transitive and the object of the half-transitive.

The intransitive illustrates the reflexive in its simplest use: *agiō'lEl*, she shakes him often (72.24), *nē'xela*, he shook (146.4), i. e., he shook *himself*; *aniaskj'Emā'tcō*, I throw him headlong into water (60 ex.), *anā'askj'amukLpa*, I jump headlong into water (60 ex.), i. e., I throw *myself* headlong into water. Generally the reflexive is used in the plural where we should use the reciprocal expression "each other": *atcō'maqt*, he shot them (32 K. ex.),

nuxó'maqt, they fight, or they shoot *each other* (270.7). Again, the reflexive is used sometimes where a simple intransitive would better suit English ways of thought. *atcupō'nit* (9.4) is translated "he hung her up," *nixpō'nit* (107.14), "he hung," and strictly *nixpō'nit* would mean "he hung himself," although we know from the context of that particular story that *he* was hung there by someone else.

After the object of the transitive *x* shows that the object belongs to the subject: *atciō'latek*, he raised him (25.21), i. e., somebody else or something belonging to somebody else; but *mckLxē'latek*, you (pl.) raise it! (50.19), i. e., you raise your own! *agó'pcut*, she hid somebody or something not necessarily her own, *agaxó'pcam*, she hid her own (feminine object; 206.5); *alkLcā'ma*, it heard it (186.3); *atciLcā'ma*, he understood him (116.6), *lit.*, he heard his own. Comparing this use with the intransitive, just given, it will be seen that they readily pass into each other by the addition or subtraction of a subjective prefix. Thus *mckLxē'latek*, you raise your neuter object, becomes *aLxē'latek*, it raises itself; *agaxó'pcam*, she hid her own (fem. obj.), *naxó'pcam*, she (i. e., the feminine object) hid herself; or, on the other hand, *nē'xela*, he shook, becomes *atcē'xela*, he shook his own (masculine object); *anxā'sk'amukLpa*, I jump headlong into water, *amEnxā'sk'amukLpa*, you throw me (supposing I am your relative or slave) into the water; *nuxó'maqt*, they fight, *atcoxó'maqt*, he shot them (members of his own family or his slaves); *nixpō'nit*, he hung, *atcixpō'nit*, he hung his own (masc. obj.) up.

There are not many cases of the use of *x* after the subject of a half-transitive verb, but those that do exist agree in every respect morphologically with its use in the intransitive, except that a pronominal object follows. In *am.xanElgu'Litck*, you tell me (97.10), *m* is the pronominal subject and *n* the object with *x* between. Rendered literally this would probably be something like "you deliver yourself of information to me." *aLxalkjumlwā'kōtsgōx*, it hides (itself) in woods to watch for it (199.17), is

another example, *L* being the subject and a second *L* the object.

The two remaining uses of this prefix, after the second object of a transitive verb and the object of a half-transitive, are morphologically identical. Transitive examples are *amlā'xcgam*, you take it from her (185.16); *Lqj'ōp aqeā'rax*, they cut her head off, *lit.*, they cut him from her (16.14); *laq° atcā'ērax*, he took her away from him (150.11). Here the reflexive refers to possession exercised over the first object by the second. Following the object of a half-transitive its use is the same. *lāq° atē'rax*, "he took them off," means literally his own plural objects were taken off from him, and since "he" himself performed the action no subject is inserted.

The relation between these two uses—after the second object of a transitive and the object of a half-transitive—is exactly parallel with the relation between those after the object of a transitive and the subject of an intransitive. *amcklā'ēlatck*, you raised it (your own), becomes, when the subject is identical with the object, *aLā'ēlatck*, it raised itself; and here *lā'q° atē'rax*, he took them from him, becomes *lā'q° atē'rax* (110.5), he took them off, when the subject and second object become identical. Since we have forms where the reflexive is used after the subject of a half-transitive, we ought to expect transitive verbs with two objects having this prefix between them. So far none have been observed; but as half-transitives of the corresponding type are very rare, this is not altogether surprising.

The reflexive prefix, then, in addition to its purely reflexive use has a possessive function. The possessor is indicated by the subject or the second object of the transitive and the object of the half-transitive; the thing possessed by the object of the transitive, by the subject of the intransitive and half transitive. In the subjects of the intransitive and half-transitive the thing possessed and the possessor coincide.

VI. PREPOSITIONAL, ADVERBIAL, AND MODAL PREFIXES

Three prefixes in Chinook convey a strictly prepositional meaning: *l-*, to or for; *n-*, into; *k-*, on. They always occur in company with a second object in the transitive, an object in the half-transitive, or an object in the transitive with *ki*.

L has been referred to in a previous section where several examples were given. We have also explained the change of *l* to *i* after *a*. Further examples of the use of this prefix are: in the transitive, *atciā'ax*, he did him to her (9.4), *amtEni/pā'yatx*, you gathered them for me (213.24), *ackLE'/ōkixax*, they two brought it to him (29.9), *aqtaw'makux*, they gave them to them (246.10); in the half-transitive, *tEn/ā'xo-ix*, I know them (*lit.*, them to me are known: 45.21), *Lā'loc*, it was in her (*lit.*, it to her was: 71.6), *cxana'ax*, they two come to be on me (193.1), *ā'ēlaot*, she did (hang) to it (224.15); in the transitive with *ki*, *lxLE/ḡe'ta-tekca*, we will throw (food) to it (174.7), *atcē'lkikc*, he spears him (133.6), *aqē'lgitgax*, they placed him in (107.12).

The uses of *n-* and *k-* will be sufficiently understood from a few more illustrations: in the transitive, *atcaLE'n'uya*, he put her into it (172.6), *atcaLEnqā'na-it*, he threw her into it (173.6), *antcānpā'nalx*, I jump into her (60 ex.), *lit.*, I jump them two (legs?) into her, *manō'tXumita*, you will make her stand on me (24.13), *aqā-ḡe'kxōl*, they put her on him (48.26), *acḡiaḡqa'na-it*, they two put him on her (116.10), *atcLō'kxux*, he poured it out on them (166.3); in the half-transitive, *sā'npōt*, she closed her eyes (74.18; *lit.*, them two had shut her within); *nēnELE'mko-it*, he flew into my eye (74 ex.); *ninE'ntctXōm*, I get out of breath (or he leaves from within me; 96 ex.); *Lō'kōc*, it was on them (39.12), *alḡō'tX*, she stood on it (191.20); *aLE'nkatka*, it comes flying above me (37 ex.); in the transitive with *ki*, *atcakḡe'tḡē*, he covered her (*lit.*, he put on her; 84 ex. K.), *aLōḡōtḡe'kxo-it*, it covered them. No cases of *n-* in the transitive with *ki* have been found. In some instances, —*sā'npōt*, *ninE'ntctXōm*, *aLE'nkatka*, —the prefix cannot be literally translated *into* or *on*, but it

is evident that the idea of something within, encompassed by, or above, on top of, is conveyed. The eyes are enclosed by the lids, the breath gives out from within, the bird is on in the sense of being above the speaker.

Six prefixes may be classed as adverbial: *gɛl-*, which indicates purpose, *gɛm-*, which conveys an idea of proximity or companionship, *X-*, "on the ground," *kj-*, "over and over" or "around and around," *tʔ-*, "good," *l-*, toward speaker. In distinction from prepositional prefixes this set does not necessarily refer to an object expressed within the verb. A few examples will illustrate their use better than any description, but it must be borne in mind that scarcely one can be uniformly translated into English by the same set of words.

Examples illustrating the use of—

gɛl-: *iamkɛʔoʔga*, I shall keep for you (128 ex.); *alɣigɛʔɛxɛmx*, it sings for him (260.17); *atcɛʔkɛʔoya*, he went to seek him (175.24); *amsgangɛʔoʔka*, you shall keep her for me (154.5); *aqɑ-igɛʔɛcim*, they struck her on him for (a purpose) (65.16); *niigɛʔlʔxɔ*, I shall do him with it for (a purpose) (24.8); *naɣɛʔoʔya*, she went to get it (224.21); *na-igɛʔɛcax*, she leaves for his sake (250.14); *nxagɛʔoʔkla*, I shall be carried to her for (a purpose) (208. ex.).

gɛm-: *nigamʔoʔma*, I shall accompany him (248 ex.); *aqɣum-oʔXuit*, they stand near it (238.4); *lamgɛmʔoʔkti*, I shall pay it to you (24.8); *aqitgɛmʔoʔktiX*, they pay him to it (261.26); *na-ikɛmʔoʔXuit*, she stood in him (near by) (129.11); *alxatgɛʔmʔapkax*, she steamed herself (239.27).

X-, "on the ground": *ɛʔXoc*, he is on the ground (39.18); *ɛʔXoc*, she is on the ground (191.15); *oXoʔla-it*, they are dead (17.2), *lit.*, they are placed on the ground.

kj-, "over and over" or "around and around": *anɛxkɛʔniakɔ*, I roll him up (63 ex.); *aniakɛʔɛmatcɔ*, I throw him headlong into water (60 ex.); *naʔɛkɛʔɛlapXuitɛ*, she fell down (headlong) (154.1).

tʔ-, "good" or "well" (cf. *itʔoʔkti*, "good"): *ɛɛtʔoʔɛgam*, hold him fast (or good) (44.15); *itɛʔtʔxɔtskin*, I am a good worker (*lit.* my good workings; 69.11).

l-, toward speaker: *aklɛʔkʔlam*, she brought it (124.24); *atcɛʔkʔtɛlam*, he brought him (to the house; 175.12, 13); *mɛʔgaʔlɛmam* come and bring her (172.15); *alɛʔnkaʔka*, he comes flying above me (37 ex.).

In use,—see the last example given,—adverbial prefixes are placed between prepositional prefixes and the stem.

Reflexive forms of *gel* and *gem*, especially the former, are very common, and their use may be further illustrated. As might be expected they are practically confined to the intransitive and half-transitive. Examples illustrating the use of—

xal—: *nxx/ŋō'ma*, I accompany (i. e., I come along for myself; 3.131); *nixx/klā'ta-it*, he remained awake (108.10); *naxx'fokō*, she awoke (for herself; 186.10); *naxx'/ta*, she left (for her own purposes; 250.10); *cxax/ŋā'qta*, they two meet (171 ex.); *acxax/kā'yu*, they two fight (16.13); *nalxx'/ax*, it becomes (i. e., she makes it for herself; 267.2); *niexx'/uktoō*, they two let him fall (i. e., he fell from them two; 127.5); *na-ixx'/gilx*, he made fire (176.16), or, "she burns for himself"; *nalxx'/qamx*, it shouted (46.21), or, she shouted for itself; *ala'xā'ciam*, she combed herself (13.2), or, it combed for herself; *nanxx'/gamit*, I strike it into myself (14 ex.).

xem—: *cxumxli'-itx*, two stood close together (228.25); *ninxem't-cē'na*, I lay it under myself (101 ex.); *allixā'motk*, it stakes him (a bet; 30.16); *nēnax'-wōa*, I kill the relative (of an evil doer; 203 ex.).

Finally, we have a prefix *l* identical in position with the prefix *t* already considered, but conveying a totally different meaning. The verb with this prefix has the force of a potential, and in translation is rendered by one of our auxiliaries, may, can, must, would, etc. [*ts!ex atclā'x*,]¹ for instance, means, he broke it, but *ts!ex ts!ē'x*, he can break it (61.8); [*nēket tā'lalx aqtō'pial-xax*,] they do not dig gamass; *nēket tā'lalx qte'pialxax*, they must not dig gamass (94.15); [*nēket am'tā'qamt*,] you do not see them; *nēket mte'sqemt*, you cannot see them (177.14). So *nāket tal' tlayā' nē'x* means I cannot make him well (199.6,5). *nāket lkcipē'Xunil*, she must not blow it up (238.16), *e'kta amē'wuwa*, what can you do? (61.19). Since the potential is not limited to any special time, the aoristic sign is usually dropped in presence of this prefix. Like the first mentioned *t* it displaces *o*. The frequent use of *nāket* in the examples given is due to the great

¹ Forms not actually found in the texts or notes are bracketed.

number of these forms in portions of the *Chinook Texts* dealing with tabus, many of which may be consulted on page 238.

VII. SUFFIXES

The Chinook verb may take suffixes of three orders, which we shall treat under the following heads: (a) locative suffixes, (b) derivational suffixes, (c) generic suffixes.

Locative suffixes, with the exception of *-am*, arriving, may be treated in pairs, as follows: *-pa* and *-pʔ*, *-wulXt* and *-tcu*, *-Lx* and *-ptck*, *-akə* and *-ə*. They indicate the various directions in which a motion may take place.

-pa and *-pʔ* are almost exact equivalents for our words *out* and *in*: *ayə'epa*, he went out (64.19), *alə'pʔ*, it entered; *atcə'ktpa*, he put them out (42.8); *nə'tp/a*, he came in (67.9); *atciə'tipa*, he dipped him out (125.7); *nə'ckopʔ*, he went in (167.18). *-pʔ* is found mainly with some form of the verb to go.

*-wulXt*¹ and *-tcu* are also nearly exact equivalents for our adverbs *up* and *down*, either in the sense of up into the air and down into the earth, or in that of up and down a stream: *ayə'wulX*, he went up (17.1); *nə'ltəd*, he descended; *ayugə'wulX*, he flew up, (81 ex.); *alə'luktcu*, it fell down (177.21); *anə'tctuwulX*, I ascend a river (in a canoe; 134 ex.); *niu'La'emitatcoa*, I will let it down (46 ex.).

-Lx and *-ptck* have no equivalents in English; *-Lx* is used of a motion from a closed or shut-in place to an open one, from woods to an open prairie, from woods or houses to a beach, from a beach to the open sea, from the sides of a house to the center; *-ptck* expresses motion in the opposite direction—the idea is perhaps best conveyed by our expressions “to the open,” “to cover.” Examples are: *ʔyəLx*, he went down to the beach (38.9); *ʔ'lu-ptck*, it went up to the woods (176.19); *tcLə'guilxrat*, he had carried it down to the beach (95.11); *nə'ptcgex*, she went up to the trees (92.2); *amialā'maLx*, you threw him into her (118.19);

¹ The *t* is difficult to distinguish.

ayō'Xuniptckax, he drifts ashore (261.5); a'yuLx, he went to the middle of the house (60.10); ayō'ptck, he went to the sides of the house (60.13). -Lx is used much less frequently than -ptck.

-akō and -ē¹ can usually be translated exactly by the English words *around* and *across*: nēxīā'kō, he went around him (88.24); aLixanid'kux, he rolls blanket about himself (24.22); nix'Enā'-nakō, he turned around (162.10); aLauweā'yaku-it, he enclosed them (50 ex.); na-i'kutetē, she crossed (74.5); anigēlgē'xaxē, I shall swim across (217.11); nikatk;ā'ya-i, I haul across (37 ex.); nigē'lkōkō-i, I wade across from here (37 ex.).

The suffix -am indicates that a thing is accomplished, that one has arrived at a certain point. We frequently find a verb of motion followed immediately by the same verb with the suffix -am. The second then means that that motion is accomplished. In line 5, page 74, we find nai'kōtētē, na-igō'tctam, she crossed, she got across. So atctō'kctam means he arrived to see them (47.17); atci'tkīam, he arrived bringing him (26.6); ayō'lxam, he arrived at the beach (23.23); acxalgē'taqtame, they arrive to meet it (275.20). In aqLgā'ōm, it is met (117.24), and niXatā'kōm, I return (35 ex.), -am is changed into -om after a k-sound.

After *i*, *u*, and the vowels this suffix appears as -mam: Lgā'lē-mam, go and take it (25.26); ē'XtkinEmam, go and find him (25.14); aLXatgō'mam, it got home (69.23); atguguixē'mam, it invited them (98.19); atcuigonā'mam, he reached the smoke-hole to open it (226.4).

The derivational suffixes are at the same time more important, more interesting, and more obscure. Two of them it has been found impossible to define with accuracy, and the others present no such simple problems to the English translator as the locative suffixes just considered. These suffixes are -x, -ait, -a-itx, -im (or -Em), -I, -L, and -tck, all of which convey some idea of the frequency or duration of an act.

-x is the suffix used to indicate that anything is customary or

¹ These two suffixes are paired for convenience only; both occur in the same word.

usual. It will thus be found throughout large sections of the texts where customs and rites are treated. *aLxEl'o'kō* means she awakes, but *aLxEl'o'kux*, it is customary or usual for her to awake (238.2); *nugō'go-im*, they say (128.4), *nugō'go-imx*, it is customary for them to say (266.5); *aqL'Elgē'mēmtoṃx*, it is customary for them to pay it (204.14); *aqexē'nxax*, it is customary for them to place him upright (48.3), etc., etc. The usage is very distinct.

-a-it marks continuity of condition or position. It signifies that the state of an object is one continuing through an indefinite period of time: *ayō'lā-it*, he sits there (i. e., continues to sit; 212.16); *yakqā'na-it*, he (rope) continues to lie there (104 ex.); *naktcā'xa-it*, she continues to wail (275.2). The following, *aLō'ckō-it*, it is hot (174.13); *mko's'u-it*, you are pretty (12.12); *ayō'txu-it*, he stood (193.1), have the same suffix, *a* being simply changed into *o* or *u* after the *k*-sounds.

-a-itx is usually translated in the texts by the word "always," but more strictly it indicates what is habitual: *antcoē'walx'tēm-a-itx*, we habitually climb (a pole, etc.; 48.1); *aLktōlā'lepīa-itx*, they habitually went digging (roots; 74.18); *qsgEmoptcā'lalēm-a-itx*, they two used to lead you by the hand (117.8); *ayō'tXu-ita-itx*, he always stood (109.2); *ayōlā'-ita-itx*, he stayed habitually (127.2). It might perhaps be suspected that this suffix is nothing more than a combination of the two preceding, but whatever its origin it is now entirely independent, as is clearly shown by our last two examples, *ayōlā'-ita-itx* and *ayō'tXu-ita-itx*, where *a-it* and *-a-itx* occur together. Its relationship with *x* is very close, yet what is habitual with one man or a body of men may not be customary among the whole people.

The suffix *-im* (or *-ēm*) is a frequentative indicating that an action is performed at several distinct times. It recalls, somewhat, *-ma*, the distributive suffix of the substantive. *ayō'*, he went, becomes with the addition of this suffix *ayō'yim*, he went several times (192.10); [*aLgē'qltuq.*] it kicked him, becomes *algeqltu'qo-im*, it kicked him many times (68.24). So *atcuxo-*

tcē'nan'Emx means "he pressed each with his fist" (98.16); atcLEkuXotē'qo-imx, he strewed on each (98.6); Lxā'xo-ilEmx, it shall become so every time (95.24); aqa-ilgā'maltEmx, they strike her on it several times (202.10).

-I, like the preceding, is a frequentative, but while the former shows that the action is performed several distinct times, and often upon several distinct objects, -I marks the essential occurrence of so many repeated movements as a part of the action itself. The actions expressed are, with the first suffix, few and comparatively limited, in the second, numerous and unlimited. Thus -I is used of the many waves on the ocean, ugō'laI, surf (92.1); the many steps in walking, oxowā'yol, the walkers (i. e. quadrupeds; 60.4); the many strokes of the wings in a bird's flight, ktgē'kaI, birds (*lit.*, the flying ones; 60.05). Other cases are aniō'leI, I bend him often (114 ex.); agilgē'xo-il, she boiled much (68.19); nēkLxēI, he crawled about much (70.24); giLā'ki-kēlaI, the seers (those always seeing; 197.15).

Sometimes -n is used instead of -I, in obedience to the phonetic tendency already noted. Thus we find oXunē'n, she was drifting about (223.10), instead of oXunē'I; niXē'nkōn, he ran about (127.13); aksō'pEnan, she jumps about (192.13); aqtomē'tckin, they find them by looking about (229.17).

Closely related to -I and continually occurring in conjunction with it is a third frequentative suffix -L. The exact meaning and use of this are still obscure. At different times it may be translated by the adverbs much, often, continually, completely. Examples are atcEmcgele'moz, he invites you much (127.9); aqIgeIgā'xo-ilx, he is asked often to do (his work; 240.24), and with -I or -n, mEnxkō'liI, you pass me often (122 ex.); oxusgā'liI, they play much (17.4); Lgitsgā'liI, she took often (264.9); acgiā'qeimEniL, they two bit him all over (26.3); Lkcitpē'XuniL, it blows him up (238.16); tēupEnā'niL, he jumps much (111 ex. K.); naō'yEniL, she stays (or camps) continually (275.3).

When combined with the suffixes -I (or -n) and -ako, or -I

and *-pa*, some remarkable phonetic changes are introduced. Thus the final *o* of *-ako* and *a* of *-pa* are dropped, *-L* taking their places, and not infrequently the *a* of *-ako* changes to *o*, while *k* itself is apt to deepen into *q*: *atcuguá'laql*, he recognized her (157.9); *nóxoëxéla'luk7*, they mix continually (132 ex.); *qtcEngá'-luql*, the one who always went first (89.5), illustrate the changes with *-L* and *-ako*; *alxat'Emā'nEauk7*, it is almost extinguished (50.26); *alKcikLkā'nanuk7x*, she steps across (264.14); *anuxuk'i'uē'niyanuk7*, I make a bundle of many things (125 ex.), those with *-n* and *-ako*; *kLola'lept*, she was habitually digging it up (153.7); *Lote'lipL*, it was dripping often (96 ex.), those with *-L* and *-pa*.

Finally, there is a suffix, *-tck*, of the significance of which we know still less than of that of the above, but, since it continually replaces *-L*, it would seem to convey a similar or an antithetic meaning, and be more naturally included in this group of suffixes than in any other. Examples are: *nau'itck*, she danced (123.21); *ayuXuá'nitck*, he drifted (134.6); *nq1ē'watckō*, I am paddling (134.26); *atsō'tXu-i'tck*, he made her ready (42.17), perhaps also, *atciō'lateck*, he lifts him (25.21).

As generic suffixes, are classed a pair which seem to give some distant reflection of our common division of verbs into active and passive. They are *-amit*, "causing," and *-xit*, "caused." The first of these may be used in the transitive or the intransitive with a reflexive; *-xit* only with the intransitive or half-transitive. The latter indicates that the subject receives some action from a source not specified in the verb. These two suffixes by no means divide all verbs between them like the active and passive voices in English, and there are few cases where the same stem seems capable of assuming both. The following are examples of *-amit*: *miō-k'uē'matctamita*, you will cause him to be ashamed (75 ex.); *aqa-ēlgā'mit*, they caused her to be fastened to him (16.1); *aqixL-d'mitakō*, they caused themselves to pass around him (69 ex.); *atcungō'mit*, he caused her to be carried away (11.5); *mxcēxLā-*

mitakō, you cause yourselves to be placed around (51 ex.); of *-xit*: *nixEl'uā'xit*, he gets bent (114 ex.); *nuwā'Xit*, she was pursued (223.10); *oXo-inā'Xit*, they are placed (145.6); *anugunā'-itir'it*, I was thrown down (45.5); *nēlgā'Xit*, he was thrown head-foremost (99.25); *ayagEltcē'mēx'it*, he was thrown against her (154.1).

A word should be said in conclusion on the order observed by suffixes when combined. Locatives always come before derivationals and give place on their part only to the generic suffix *-amit*. When *-am* occurs with other locatives it is placed after them; *-xit* is always next to the stem; *-l*, normally, is before all other derivationals, then comes *-t*, *-a-it*, or *-tek*, followed by *-im*. Next *-a-itx* or *-x* may be inserted, and at the end the temporal suffixes *-a* and *-t*. The locative *-c*, across, is always last and is never found in combination with derivational suffixes except *-x*. These statements have reference only to the general order of suffixes, and it is not to be supposed that a whole series will be found in any one form. *antco-ē'wālx'tēma-itx*, we continually climb (48.1), where we have the locative *-wālx't* (equivalent to *-wulXt*), up, followed in succession by the derivationals *-ēm* and *-a-itx*, gives the common order with three suffixes. Also note *niklxē'lal-ēm-a-itx*, he crawls about much (94.23), and *alKtōlā'lē-pla-itx*, they habitually go digging (74.18); *ayō'plam*, he entered (58 ex.). A final *l*, whether the suffix or a part of the stem, is usually doubled before other suffixes.

VIII. Mood

The indicative may well be considered the normal mood of every Chinook verb, and its use is illustrated by nearly all the examples given. The potential is differentiated from this by the insertion of a prefix *l*, but as its use has been fully explained in section VII, all that remain to be examined are the imperative and two participles.

In both transitive and intransitive the imperative lacks the

aöristic sign *a-* and the verbal prefix *a-*. The intransitive changes no further: *amō'la-it*, you stayed (11.13), *mā'la-it*, stay! (15.13); *ayō'tXu-it*, he stood (184.20), *mā'tXu-it*, stand! (15.6);—and the same is true of the transitive verb when the command is addressed to more than one person: [*mcklucgā'ma,*] you (pl.) shall take it; *mckt'ckam*, you (pl.) take them! (271.20); *mcklxē'latek*, raise it! (50.21); *mcixlā'kō*, go around him (138.15). When the command in the transitive is addressed to one person, however, the first pronominal prefix is dropped: [*amē'ctek'ɿ,*] you (sing.) carried them two away, *ci'k'u'ɿa*, carry them two away (262.2); [*amiō'cgam,*] you took him, *ē'cgam*, take him! (44.10); [*amlgā'lemam,*] you went and took it, *lgā'lemam*, go and take it! (25.26). The presence of a second object—e. g., *iā'lot*, give him to her! (90.6)—makes no difference.¹ Half-transitive imperatives simply drop the aöristic prefix: *LEMcxē'ltcam*, comb yourselves (138.5); *amxē'lgilx*, make fire (149.11), *ɿ* and *a* being the respective subjects, *mc* and *m* the objects. It not infrequently happens that the future is used where we should employ an imperative; as, for instance, *mētockā'mai*, take hold of them (*lit.*, you shall take hold of them; 13.1).

The participles are the passive participle, formed by prefixing *i-*, and the active participle, which takes *g-*, *k-*, or *q-*. In the former *i-* is immediately prefixed to the verb stem, and though suffixes, especially *-ɿ*, frequently appear at the same time, they are not essential. From [*agā'yū*]stx, she carried him (43.26), is derived *ē'ctxul*, load (61 ex.); from [*aqiō'*]tcXam, they boiled him (46.7),

¹ This omission is perhaps to be correlated with that noticed in treating the indirect object where we said that, when the subject is in the first person singular and the object in the second, the subjective prefix is omitted: *tamāō'ta*, I will give them to thee (15 ex.); *Langēmō'ktia*, I pay it to thee (24.8). Probably it seemed natural to the Chinook, when two were conversing and one spoke of doing something to or for another, to assume that the speaker himself was the doer without indicating it by the pronominal prefix. Perhaps this may have something to do with the failure of *a* to appear in the pronominal combinations *ayam-*, *ayami-*, and *ayami-*. In the imperative under consideration the subject of the command would generally be singular and could simply be understood. In duals and plurals the subjective prefixes would then be introduced for definiteness.

itcXá'mal, boiled food (63 ex.); from [atcLó']tēna, he killed it (23.22), id'k;etēnax, what he killed (94.4). The last, it will be seen, inserts *k/ē*, a common phenomenon in the formation of participles, as instanced in the discussion of *kī*, section V, and takes the masculine possessive prefix *ia-*. This participle, in fact, is treated exactly like a masculine noun, and may take all its possessive prefixes. We have *ictā'ctxōl*, her load (75.8), as well as *ē'ctXul*; *itā'tcEXmal*, what they had boiled (or their boilings) (46.22), as well as *itcXā'mal*. We seem to have a few instances of passive participles of other genders: *Igd'pona*, what they brought to her (249.9); *ctākemē'mtōm*, what they had received in pay for curing (150.12); *oyā'tuwanXa*, the one he was racing against (48.10).

The active participle is formed in two different ways: first by prefixing *k-*, *g-*, or *q-* to a substantive or a verb-stem, preceded by a possessive prefix, or secondly by prefixing one of the same letters to a verb, in place of the sign of the aōrist. Thus the stems *-ckēwal*, *-kēl*, *-kanate*, *-lXam*, to walk, to see, life, people, may be built into the participles *gitā'ckēwal*, travelers (*lit.*, those possessing walking powers; 259.23); *gitā'kikēlal*, the seeing ones (those possessing seeing powers; 196.1); *giLa'Xanatē*, those having souls (199.9); *gitā'lEXam*, the people of a town (or those possessed of a town; 248.1). Examples of the second method of forming active participles are: *kLkēx*, being (261.29), from *Lkēx*, it is; *qtgē'kal*, birds (60.5), from *tgē'kal*, they fly; *kLktō'tx*, the one who gives them away (255.3), from *alKtō'tx*, it gives them away; *kLkLā'x*, the one who did it (202.9), from *alKlā'x*, it did it.

IX. VERB-STEMS

Although the stems of many Chinook verbs are not clearly defined, they seem to have consisted normally of a single vowel sound or a small group of consonants: *-ə*, to go; *-a*, to pursue; *-lX*, to stand; *-k*, to put; *-ket*, to look, etc. In several cases the stem is an onomatopoeic element, which is also employed indepen-

dently: *nugugue'staq; oamX*, they go to war (270.1); *staq; giä'xo*, war she will make on him (116.25); *atctupë'XoXoë*, he blew them away (25.14); *Xue'Xue' age'Lax*, blow (*or* breathe), she did it (213.13); *ackLj' mEnë*, they two dived (47.12); *LjEmE'n atcä'x*, into water he sent her (162.20). The use of onomatopoetic elements as invariable verbs accompanied by a modifiable auxiliary is much more common than as stems with pronouns directly prefixed. Indeed, this is one of the marked features of the language, and requires considerable illustration. "To go" is the accompanying auxiliary in one or two places: *LjEla'p ayo'*, he went under water (14.16); but almost universally it is "to do" (*atca'x*, he did, etc.), or the reflexive form (*në'xax*, he became). A selected list of examples follows: *Laq aqë'cxax*, they took him away from them two (45.9); *tsjE'xts;Ex atgä'yax*, it split him up (45.19); *tuwä'X nō'xōx*, it became light (45.27); *tcXup ä'Lax*, it was extinguished (51.3); *tcXEp në'xax*, he began to hesitate (*lit.*, he became hesitant; 28.1); *wax ikë'x*, blossom they (*lit.*, he) did (165.26); *kj'ä'ya në'xax*, he became nothing (29.10); *qxul atcë'lax*, he hung him on him (27.16); *Ljap atciä'x*, he found him (139.23); *tä'mënuu alxä'x*, he gave up (139.26). The number of illustrations might be multiplied almost indefinitely. Doubled onomatopoetic stems—*tsjE'xts;Ex*, split in pieces—convey a frequentative meaning. Many substantives are also used in this way: *tXut nō'xōx*, smoke they got (i. e., it became smoky; 45.22); *Lkä'pa alj'xax*, snow it became (*or* it snowed; 45.1); *Lqä'kxul atj'xax*, hail it became (*or* it hailed; 25.9); and again they are often used, like onomatopoetic words as verbal stems: *ö'utca*, ear (5 ex.), *noxwiv' teatk*, they listen (275.18); *j'kta*, thing (117.11); *iamkEmö'ktia*, I pay thee (24.9); *ö'kumatk*, baton (191.12), *nauä'Xë'matk*, I beat time with a baton (27 ex.); *nauä'itk*, net (95.23), *nixënanuwä'itkëmama*, I will make net (100 ex.); *Lqëtcamë'të*, comb (13.20), *älEnaxa'ltciam*, I comb myself (8 ex.); *ö'pXa*, alder-bark (66.21), *nLalö'pXa*, I dye in alder-bark juice (125 ex.); *tä'ta*, uncle (9.16), *amEnä'tata*, I am your uncle (23.26).

Some Chinook verbs form the singular and plural from entirely different stems: *iô'c*, he is there (219.7), *ôxoêlâ'-itx*, they are there (153.10); *nagê'tcax*, she cried (40.3), *noxoê'nêm*, they cried (139.18); *ayô'maqt*, he was dead (275.1), *nuxô'la-it*, they were dead (41.25); *atciâ'wa'*, he killed him (228.18), *atctotê'na*, he killed them (11.6).

Plurals are also formed from the singular by dieresis of the stem, as *nixâ'latch*, he rose (38.9), *nuxu/â'yutck*, they rose (127.14); *nax'ô'tam*, she went to bathe (13.2), *lx'ô'yutam*, we go to bathe (174.3); *aniâ'g'ô'la*, I put a long stick on (something) (104 ex.), *antik'ô'yoLa*, I put many sticks on (something) (104 ex.); *nau'itck*, she danced (123.21), *mcXeluwâ'yutck*, you (pl.) dance (36 ex.).

Where English would require verbs or adjectives, substantives are frequently employed in Chinook. Instead of "he fell sick," the expression is *â'yatcha nixâ'lax*, his sickness came to be on him (125.3); instead of "he was poor" (*or* unfortunate), *lâ'xauyam*, his poverty (*or* misfortune) (234.15); instead of "the mother of you two is bad," *LEmt-â'naa itcâ'q'atxal*, your (two's) mother, her badness (13.24); instead of "he shot him," *iâ'ma' aqé'lax*, the shooting was done to him (71.8).

A singular phenomenon is the personification of purely bodily states or actions which are then represented as acting upon the person who experiences or performs them. What with us is caused, becomes in the Chinook idea the agent. Thus instead of "I am hungry" the formula is *ô'lo gena'xt*, hunger, she has acted on me (70 ex.), instead of "she tells lies," *igô'lgeli tcaxt*, lies have acted on her (167.14).

X. COMPARISON WITH THE VERB IN OTHER AMERICAN LANGUAGES

The character of Chinook phonetics associates this language with those of the northwest coast. It abounds in k-sounds, catches, fortes, and explosive l's.

The verb-stem undergoes few modifications. The absence of a close relationship between verbal and substantival stems, and the extreme shortness of the former compared with the latter, separate it still further from other groups such as Eskimo and Sioux. A very few verbs have substantival stems, while verbs themselves resemble substantives only when used as participles. One of the most striking characteristics of the language is its excessive employment of onomatopoeic elements, especially with an auxiliary. Such are rarely found either in Sioux or Eskimo. Singular and plural are formed from different stems in a remarkably small number of cases. The language is thus very different from most other American languages and stands at the opposite pole from Athapascan which even admits of a different stem for each person. An equal simplicity appears when we turn to the cognate subject of reduplication. Curiously enough this widespread North American characteristic, usually employed to indicate distribution, collectivity, or different kinds of plurality, reaches its maximum development among the Salish, while here, close beside them, it is found only in the names of animals and in onomatopoeic stems, as simple duplication. Dieresis of the stem may be supposed to make up for this lack, but its use is very restricted. Metamorphoses caused by the harmonic law between *o* and *u* and the *k*-sounds are almost the only stem changes still to be noted. Traces of them are found elsewhere, but the phenomenon does not reach anywhere near the same proportions. The tendency to elide velars is also peculiar.

Comparing the use of affixes we find this language again very deficient. Setting aside the pronominal elements, Chinook may be called a suffixing language, and, insofar, similar to the majority of American tongues, but the number of such suffixes is very limited and the relations indicated correspondingly few. Compared with the excessive use of affixes in Kwakiutl, Eskimo, Tsimshian, and others, nine locatives, seven frequentatives and continuatives, three prepositionals, and six adverbials make a very

insignificant showing indeed. Moreover, whole series of affixes, such as the nominal of Kwakiutl and the instrumental of Athapascan, Tsimshian, and Sioux, are wanting. Niceties of location, action, etc., which are and must be indicated in many of these tongues, are not required in Chinook, but an opportunity is afforded for the expression of abstract ideas not permissible in them. The causative suffix has here a very limited range compared with its occurrence in Sioux. Of the various moods expressed by affixes in American languages, Chinook has only the potential. Tenses, as for example in the case of Choctaw, are usually much more numerous.

The strong point in Chinook lies, however, in its pronominal system, which is developed to a point unapproached elsewhere on the continent. The existence of a separate prefix for every person of the three numbers, singular, dual, and plural, including exclusives and inclusives in the first person dual and plural, is of itself far from universal, but here the entirely exceptional presence of a sex gender increases the number still further. At the same time the number of morphologically distinct subjective affixes in the transitive is less than usually occurs. The indefinite subjective finds its counterpart in an indefinite objective in Tlingit and Haida. The following table shows the possible combinations of pronominal prefixes:

	Subj.	1st Obj.	2d Obj.
Transitive with 1 object - - -	—	—	
Transitive with 2 objects - - -	—	—	—
Transitive with 1st obj. followed by <i>ki</i> - - -	—	—	
Transitive with 2d obj. followed by <i>ki</i> - - -	—		—
Intransitive - - - - -		—	
Half-transitive - - - - -		—	—

And when one considers that by using the pronominal prefixes in the various persons in the transitive with two objects alone, about two thousand combinations can be formed, some idea is obtained of the great efficiency of the system. The employment

ERRATA

Page 201, line 16, for t read :

"	202	"	29	"	266.21	read	226.21
"	203	"	17	"	95.2	"	95.20
"	205	"	31	"	95.2	"	95.20
"	205	"	16	"	107.1	"	107.2
"	205	"	16	"	270.7	"	266.5
"	206	"	21	"	89.2	"	89.21
"	207	"	3	"	204.16	(second reference) read	204.7
"	207	"	19	"	icayá'muke	read	lcayá'muke
"	208	"	12	"	golé'leXemk	"	lgolé'leXemk
"	208	"	13	"	226.8	read	22.6.8
"	211	"	19	"	76.10	"	176.10
"	213	"	10	"	235.14	"	235.15
"	214	"	5	"	111.10	"	130.8
"	216	"	25	"	nalxe'lqamx	read	nalxe'laqmx
"	217	"	5	"	157.1	read	154.1
"	219	"	9	"	30.6	"	213.11
"	220	"	13	"	206.5	"	216.5
"	222	"	14	"	193.1	"	193.19
"	222	"	26	"	74.18	"	47.18
"	223	"	20	"	na-ige'ltcax	read	na-ige'ltax
"	224	"	8	"	3.131	read	136.13
"	224	"	9	"	186.10	"	186.11
"	224	"	29	"	199.6.5	"	199.6.7
"	225	"	14	"	125.7	"	25.7
"	227	"	13	"	12.12	"	12.13
"	228	"	1	"	98.16	"	98.6
"	228	"	14	"	60.05	"	60.5
"	228	"	16	"	70.24	"	95.14
"	231	"	10	"	262.2	"	26.22
"	233	"	1	"	staqigia'xo	read	staqj gia'xo
"	233	"	18	"	qxul	read	qxul
"	233	"	25	"	45.1	"	42.1

of a second objective prefix, and the use of the half-transitive, seem to be extremely rare on this continent.

Nominal sex gender is another striking peculiarity of Chinook. Traces of it are found elsewhere in North America among the Salish, the Chemakum, the Iroquois, and the somewhat questionable Taënsa. The usual distinction between animate and inanimate is found in demonstratives, adjectives, and, originally at least, in nouns. There is an almost excessive use of the auxiliaries, to go and to do, especially the latter, but, singularly enough, other English auxiliaries such as may, must, can, might, would, which elsewhere in America are expressed by affixes, here appear as adverbs — qā'doxue, must; aia'q, can; qē'xtce, intending, qxá'oxat, cannot — depending on the verb.

Since the gender of each substantive is always indicated by a pronominal prefix, and since, if this substantive happens to be the subject, object, or second object of the verb, the relation is expressed by a corresponding prefix in the verb itself, the substantives really stand in apposition to the verb. Other substantives are connected to each other or to the verb by means of the general preposition *go*, or by the use of a possessive prefix. This latter method of subordinating substantives is very characteristic of the language. The verb is thus the vital center of a Chinook sentence, about which all else is built and upon which it all depends.

ORAIBI MARRIAGE CUSTOMS

By H. R. VOTH

The marriage ceremony of the Hopi Indians of Arizona is a complicated and protracted performance, and while the customs and ceremonies in the different Hopi pueblos are essentially the same, I will confine myself to those observed at Oraibi, the largest and most primitive of the villages of Tusayan.

It is well known that among some civilized as well as among some half-civilized peoples, a consideration is given for the woman or girl to be wedded; and while in some cases this is done in such manner that it can hardly be said the woman is bought, in others it is equivalent to direct purchase. Among the Hopi Indians marriage by purchase does not exist. To be sure gifts are made to the bride and by the bride; but the former can in no wise be regarded as an exchange for the woman, hence in this respect the marriage customs of Oraibi differ materially from those of many other primitive peoples, including many of the American tribes. Furthermore, among the Hopi the choice of a life companion is left almost entirely to the couple contemplating marriage, coercion on the part of the parents or guardians being exercised only in rare instances.

The condition of affairs in a Hopi village is such that young people have ample opportunity of becoming thoroughly acquainted. Nearly all the houses adjoin, and most of the streets are narrow. Families do not come and go as in a settlement of white people, and, above all, social intercourse is not influenced by language, occupation, social standing, or religious differences, as in most Caucasian communities. So the Hopi mingle with one another from early childhood; they grow together into manhood

or womanhood; on the common playground, in their daily occupations, in the many social and religious gatherings, they meet and learn to know and to love or to hate one another. When one has made his choice it is not a difficult matter to make the fact known to the other. To be sure this cannot be done through missives of love, because the young Hopi, with the exception of the few who in recent years have attended schools, are not versed in the art of writing. Although rare, opportunities are not lacking for a young man to meet the girl of his choice, either in the village or perhaps in company with an intimate friend outside the pueblo, and make known to her his feelings; but after this announcement it becomes more usual for lovers to meet alone either in the settlement or beyond its limits.

The love affair of a young couple often remains a matter between themselves so far as any public declaration of their relations is concerned; but under the circumstances of close communication in the village, above mentioned, the prospective relationship becomes an open secret at once. In many cases the young people soon inform their parents or guardians of their betrothal. A request for permission or sanction is rarely asked or indeed expected, acquiescence on the part of the parents being regarded as a matter of course. Viewed from our standpoint the young people may now be regarded as engaged or betrothed. The young man visits his affianced occasionally at her home. When it is decided by the young people that they are ready to be married, the parents, or their representatives, are notified. This "being ready" is determined to some extent by the pecuniary affairs of the husband-to-be. Young men have complained to me that they would like to get married, but "*Nu ookiwa, nashita cavayo, nashita moro, nashita shiwa, nashita pisala*" (I am poor; have no horse, no burro, no metal (money), no blankets). A young man is expected to have at least these most necessary belongings, perhaps also some beads, and, if possible, a little money before he marries, but as his requirements in this

respect are meager, the conditions are by no means strict. To some extent the time for the wedding is determined by the custom that marriages rarely, if ever, take place during summer, and seldom in late spring, when the Hopi are busy in their fields, but in autumn or winter, the time of leisure, of gaming and frolic, of ceremonies and *katsina* dances.

As soon as the bride-elect has notified her mother, or, in event of the death of the mother, an aunt, that she is ready to be married, the mother takes down the girl's hair, which has hitherto been worn in two coils or whorls, and ties a knot in the loosened hair on each side of the head.¹ Taking a tray of meal made from white corn, the mother accompanies her daughter to the house of the latter's future husband. So far as present information goes, this is always done either late in the evening or very early in the morning. Arriving at the door, the mother calls, saying, "*It kwunshun*" (Take this). The door is at once opened by the future mother-in-law or her substitute, who, of course, is acquainted with the situation. The latter takes the tray of meal, saying, "*Ask-wali*" (Thank you), "*Pakii*" (Come in), or "*Katuu*" (Sit down). The girl enters, but the mother usually returns to her home.

The girl is now called *mövi* (bride).² If she has come in the morning she is at once assigned a place at the meal-grinding trough, where she grinds white corn all day; if late in the evening, she remains over night, sleeping with the female members of the family, and begins to grind corn the next morning. The young man goes about his business as usual—gathering wood in the hills, performing other tasks, or loitering in the kiva to which he belongs. Late in the afternoon the *mövi* stops grinding corn and sits during the entire evening on folded skins or blankets, generally near the meal-troughs. She wears her usual clothing, but sometimes, I

¹ I am told that in other villages the hair is not taken down until the girl arrives at the home of her betrothed.

² The term *mövi* is applied indiscriminately both before and after the actual marriage ceremony or wedding-day.

believe, she places over it the *atõe* or white ceremonial blanket with a blue and red border. Little conversation is held with a *mövi* during this and the following days of the betrothal. Whenever I spoke to a young woman about to be married, she usually responded pleasantly to my inquiries, but informed me that she was expected not to talk much, and on one occasion the mother-in-law, who was an old friend, sat near by when I began to speak to the *mövi* and told me it was customary with the Hopi, to speak very little to a bride.

The next morning the corn-grinding is resumed and continued all day, white corn being selected as on the previous day. On the third day the grinding is again undertaken, but this time a bluish-black corn is used. In the evening of this day the various girl friends of the *mövi* bring trays of cornmeal to the house where the latter stays. On the next (fourth) morning these trays are filled with ears of corn and returned to their owners by the mother-in-law of the bride. This day may be called the wedding-day proper.

Long before dawn the bride and her mother-in-law arise, and the mother of the bride arrives about the same time. The bridegroom and the remainder of his family then get up, and soon a number of female relations of both families, especially the aunts, begin to appear, each one bringing a small quantity of water in a vessel. At the fireplace in the corner water is being boiled in a large pot. The two mothers prepare, in two large bowls, foaming suds of the pounded roots of yucca (*Yucca angustifolia*), called by the Hopi *mohu*, to which some warm water is added. When this is ready the mothers kneel on the floor, placing the bowls of suds before them. The young man then kneels before the bowl prepared by his future mother-in-law, and the *mövi* before the bowl of the young man's mother; their heads are then thoroughly washed with the suds. Although the two mothers do the principal work, they are now and then assisted by the gathered relations, who pour a handful of suds over the head of each and aid in the

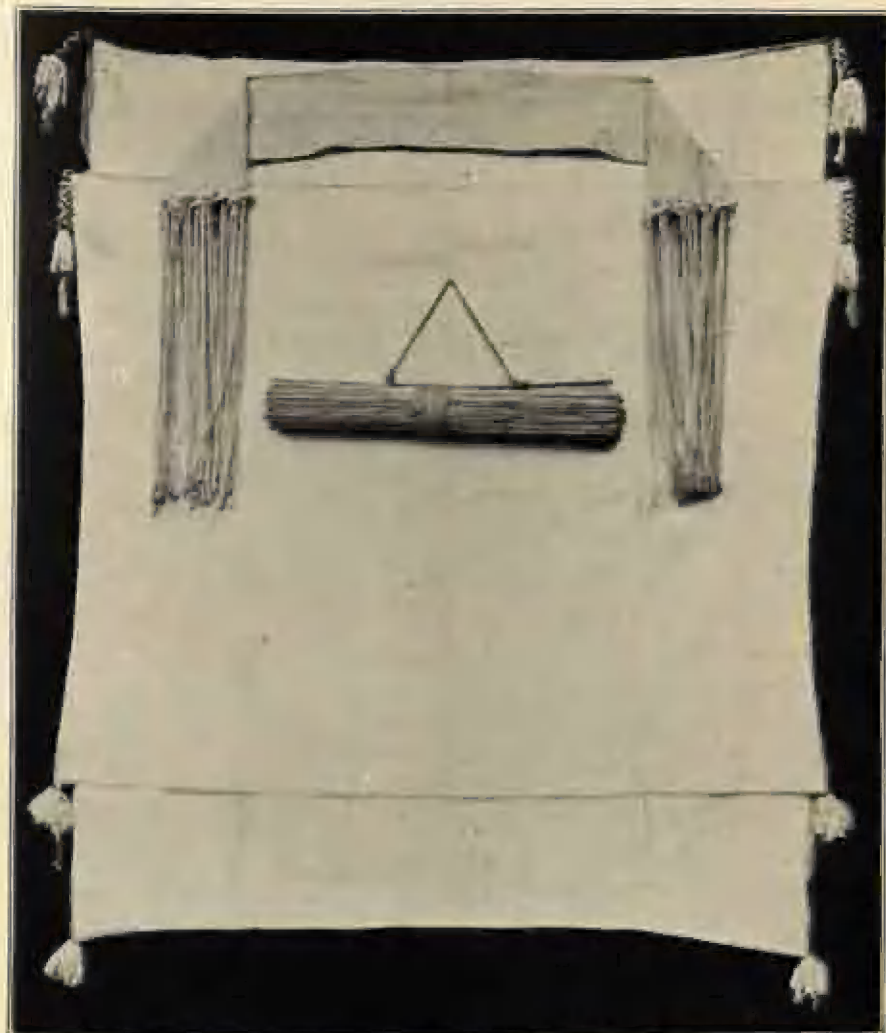
washing. Presently one after the other of the women and girls, and sometimes more than one at a time, creep in between the young couple, trying to hold their own heads over the bowls and feigning to displace the bride. Others try to tear away the intruders and to take their places, the wrangling being accompanied with much hilarity. When the head-washing is about concluded, all who have brought water with them pour it on the heads of the couple, thus assisting in rinsing the hair. After thoroughly pressing the water from the hair, the young man and the maid sit near the fireplace to warm and dry themselves. Most of the visitors then return to their homes.

When the bridal couple have dried their hair, each takes a pinch of cornmeal and both leave the house and go silently to the eastern side of the mesa on which the pueblo of Oraibi is situated. Standing close to the edge they hold the meal to their lips, breathe a silent prayer, and then sprinkle the meal toward the dawn. They then return to the house as silently as they departed, and henceforth are regarded as husband and wife. "What did you pray when you sprinkled the meal?" I asked a friend who had recently been married. "I asked God to make me happy," she answered; but she had been attending the government school for a number of years. The usual prayer, I believe, is for a long and prosperous life, but the wording varies with the occasion.

After the ceremony is over, the mother of the bride builds a fire under the *piki* stone, while the daughter prepares the batter and at once begins to bake a large quantity of *piki* or paper-bread. After having built the fire the mother returns to her home.

A number of the members of both families assemble and partake of breakfast. Whether particular relations only are present at this meal, or whether a ceremony of any kind occurs in connection with it, has not been ascertained, although it is believed that such is not the case.

After breakfast the father of the young man takes some native



HOPÍ BRIDAL COSTUME

cotton and, running through the village, distributes it among the relations and friends of the family, who pick the seeds from the cotton and then return it. Before the man leaves the house some wrangling takes place in which he and the bride take conspicuous part and which is attended with much joking and hilarity. Whether this episode is the rule or an exception, and just what it consists of, are not fully known. On one occasion the father's hair, face, and clothing were daubed with clay when he emerged from the house with a ragged bag containing the cotton. Nothing of special significance occurs in the house during this day. Friends come and go, each one partaking of the food kept in readiness, the floor of the house, as usual, serving as a table.

A few days later a cryer announces from the roof of a house that on a certain day the cotton for the *mōvi's* bridal costume will be spun in the kivas. This announcement serves as an invitation to the friends of the young couple to participate in the spinning. Whether this invitation includes everyone in the village, or whether it is limited to the relations and friends of the two families, has not been fully ascertained, but there are reasons for believing that the invitation is a general one. Just after breakfast on the appointed day the men assemble in their respective kivas and are soon at work, some in carding, others in spinning the cotton furnished by the parents of the bridegroom. The rasping of the carding combs and the buzzing of the primitive spindles are accompanied by the singing, joking, and laughter of those assembled. The affairs of the village are discussed, its gossip rehearsed, and occasionally some good story-teller relates interesting adventures of war and the chase during the busy hours occupied in the work. On one occasion the principal entertainer was an old man from a neighboring village. He related certain personal experiences of his younger days, when he had been on the warpath with other Hopi against another tribe, and the rapt attention with which the spinners listened to him, and the uproarious laughter that punctuated certain well-told incidents

of his exploits, bore testimony to the old man's ability as an entertainer.

In the house where the marriage has taken place many busy hands, mostly those of women, have prepared dinner for the cotton spinners. On the previous evening sheep and goats, generally ten in number, were killed, and these are now being cooked in a stew consisting mainly of corn. Large quantities of *piki* are being baked and other dishes are in preparation in various houses. Late in the afternoon a herald announces that the feast is ready and invites the spinners, some of whom are already waiting on the neighboring house-tops. They respond to the invitation in scores, and arrange themselves in rows on each side of the food-bowls and baskets that are spread on the floors of the different rooms of the house and even of adjoining houses. The fingers serve as forks, knives, and spoons, and the stainless members contrast strongly with the grimy hand after the meal is finished, bearing witness to the fact that the stew in the bowls has served a double purpose. After the visitors have finished the meal the relations and intimate friends of the family partake of the food, and generally little is left when all have been satisfied.

The cotton that has been spun is taken by the spinners to the house of the young man, and the manufacture of the bridal costume is soon commenced in one of the kivas. This costume consists of two square white blankets (one measuring about 60 by 72 inches, the other about 50 by 60 inches), a white sash with long knotted fringes at each end, a reed mat in which the costume is afterward kept (plate VIII), and a pair of buckskin moccasins to each of which is attached half a buckskin which serves as leggings. This costume is usually made by the bridegroom and his male relations, especially his father. One works on the robes, another on the moccasins, a third one on the belt, etc.; each labors a few hours and then is relieved by another. It sometimes requires several weeks to complete the costume. The finishing of the robes consists of giving them a coating of wet



HOPI BRIDE GOING HOME

This plate illustrates one of a series of Hopi figures now on exhibition in the Field Columbian Museum. The casts for these figures were made at Oraibi under the direction of Dr G. A. Dorsey, Curator of the Department of Anthropology, to whom the author is indebted for the photographs from which this and plate viii were prepared.

kaolin. They remain in the loom until dry, when they are taken out, folded, and carried to the house of the bride, where the tassels are made and appended.

The entire costume is now given to the bride, who is regarded as having been married several weeks, and on the following morning the final act in the marriage drama, the so-called "going home," takes place. The bride is arrayed in one of the white robes and puts on her moccasins. The other robe and the white belt are wrapped up in the reed mat, and shortly before sunrise the bride leaves the home of her husband's parents, where she has been staying since the marriage, and, holding the bundle with the robe and belt on her extended hands, walks slowly and alone through the streets to the home of her mother (plate IX). Here she is met by the latter at the door with the greeting "*Askwali um pito*" (Thanks that you have come). The mother takes the bundle from her daughter, the latter doffs the robe and moccasins, and the protracted marriage ceremony is over. During the day the young husband appears at the house of his mother-in-law, where the couple live until a house of their own is provided. If the house thus temporarily occupied chances to be crowded, another is sometimes soon prepared; if not, the couple may live with the wife's father and mother for several years.

The marriage costume is rolled in the mat receptacle, which is usually suspended from a roof-beam in a back room. The moccasins are soon put to ordinary use, but the robes and belt are worn only on ceremonial occasions. One of the white robes is sometimes embroidered, when it becomes a ceremonial garment and is called *toihi*. Often, however, on account of its strength and large size, it is sooner or later converted into a bag for use in transporting corn and watermelons on burros from the fields to the village. The other robe is generally preserved for a longer period, and is employed in various future ceremonies. The young mother puts it on at the name-giving ceremony of her

first-born, and it often serves as a shroud when its owner is given her last resting-place.

In conclusion, mention should be made of the fact that at the *Niman-katcina*, the "farewell" ceremony of the *katcinas*, when toward evening the latter are ready to depart, all the young women who have been married during the year appear in the crowd of spectators dressed in their white robes, look on for a time, and then go to their respective homes. Whether this is an essential part of the marriage ceremony, and what its significance is, have not yet been ascertained.

THE DEPARTMENT OF ANTHROPOLOGY OF THE FIELD COLUMBIAN MUSEUM—A REVIEW OF SIX YEARS¹

By GEORGE A. DORSEY

THE ORIGIN OF THE MUSEUM

The termination of the World's Columbian Exposition in October, 1893, made imperative the founding in Chicago of a permanent scientific museum. Not only had the chiefs of certain departments of the Exposition, especially those of Mines and Metallurgy, Anthropology, and Transportation, assembled extensive exhibits which had been specially prepared with a view to the needs of a permanent museum, but opportunities were offered on every hand by domestic and foreign exhibitors for the immediate acquisition of valuable collections, which, under ordinary conditions, would consume much time and money for their assembling. The work of establishing a museum was given a new and irresistible impetus by the splendid gift, on October 26, 1893, of one million dollars by Mr Marshall Field. Within a few months this fund had increased by cash contributions to the extent of nearly half a million dollars more. The Museum was incorporated on the 14th of September, 1893, as the "Columbian Museum of Chicago." On June 25, 1894, this name was changed to "Field Columbian Museum." Mr E. E. Ayer was elected president of the board of trustees and Mr H. N. Higinbotham was chosen chairman of the executive committee; in October,

¹*An Historical and Descriptive Account of the Field Columbian Museum*, December, 1894, and *Annual Report of the Director to the Board of Trustees*, Vol. I, Nos. 1-5, 1895-1899.

1899, Mr Higinbotham was also elected president of the board, Mr Ayer having resigned in January of that year.

During the fall and winter of 1893 the work of transferring the collections donated by the Exposition was being rapidly performed. The Fine Arts building of the Exposition had been decided upon as the temporary home of the new Museum, and space was at once allotted to the different departments. In the meantime many donations of valuable collections had been made by various Exposition commissioners, and many other collections were bought outright, and by the opening of the year 1894 the work of installation had been entered upon in earnest. The Museum was dedicated and declared open to the public on June 2, 1894, by Mr Frederick J. V. Skiff, director.

An examination of the director's first report shows that the Museum consisted at that time of the departments of Anthropology, Geology, Botany, Zoölogy, Ornithology, Industrial Arts, and the Columbus Memorial, and of the divisions of Transportation and the Railway. By this time also (October, 1895) four courses of lectures had been given, a publication series, including a guide, had been begun, a library had been organized, a thorough system of records and departmental inventories had been inaugurated, a section of photography and a printing office had been established, and several expeditions had been undertaken in the interests of the various departments.

From the director's reports for the five years are extracted the following statistics showing the total expenditure and the attendance for each year:

<i>Year</i>	<i>Expenditure</i>	<i>Attendance</i>
1895	\$156,909.97	328,321
1896	156,999.53	230,337
1897	104,804.88	220,283
1898	111,940.50	224,246
1899	128,936.50	223,304
Totals	\$659,591.38	1,226,491

Examining the latest available reports of the American Museum of Natural History (1898), and of the United States National Museum (1897), it is shown that their expenditures were \$204,955.95 and \$186,498.33 respectively. The attendance is not stated for the American Museum; for the National Museum it was 229,606.

THE ORIGIN OF THE DEPARTMENT OF ANTHROPOLOGY

Confining our attention now to the Department of Anthropology, let us first notice the material presented by the directors to the Museum at the close of the Exposition. These collections were obtained through special expeditions sent out under the direction of Professor Putnam, or by collectors resident in the field who were commissioned by the Department of Ethnology to undertake the work. The principal expedition to South America was under the direction of George A. Dorsey, who in 1891 was sent to Peru, Ecuador, Chile, and Bolivia. Other collections from South America were gathered through United States naval officers, commissioned by the department to go to widely remote localities; the result of their work is to be seen in the Scriven collection from Costa Rica, the Welles collection from Orinoco river, the Safford collection from Peru, and the Bertolette collection from Paraguay.

The Central American field was covered by Mr Edward H. Thompson, United States Consul to Yucatan, under whose direction a series of casts from Central American ruins was procured, as well as by the research conducted by Messrs Saville and Owens. The archeological collection from southern California was obtained through the services of Stephen Bowers, of Ventura, California.

A series of archeological investigations among the ruined structures of North American aboriginal peoples was also initiated by Professor Putnam, and resulted in collections from Little Miami valley and the Hopewell group of mounds in Ross county.

Ohio, collected by Warren K. Moorehead; the archeological collection from New Jersey by Ernest Volk, the Michigan collections by Harlan I. Smith, and the collection from Ohio by Dr C. L. Metz; also the models of Ohio earthworks prepared under Professor Putnam's direction.

Expeditions were sent also to Alaska and among various Indian tribes of Canada and the United States, principally for the purpose of gathering anthropometric data, but incidentally to collect ethnologic material. The most important of these expeditions were those to northwestern America, where extensive collections were made by Deans, Jacobson, Eells, Swan, Morrison, and Hunt, all under the personal direction of Dr Franz Boas. Other valuable ethnological collections were made by Cowie among the Cree, Wilson among the Assiniboin, McLean among the Blackfeet, and Hall among the Ojibwa.

Chief among the collections presented to the Museum at its founding was that by President Ayer, comprising material from the Northwest coast, California, the Pueblo region, the Plains Indians, the Great Lakes region, Mississippi and Ohio valleys, and Mexico, the whole forming an extensive and unrivaled exhibit, the result of many years of discriminate collecting. Valuable collections were also donated by the governments of British Guiana, Mexico, and Nicaragua. Among the collections exhibited at the Exposition and purchased by the Museum should be mentioned the following: the Montez collection, illustrating the archeology of the Cuzco region of Peru; the Colombia collection of gold, silver, stone, and ceramics from ancient Chibcha graves; the Hassler collection from the Gran Chaco region of Paraguay; the Umlauff collection of ethnological material from northwestern America and from Patagonia, Africa, and Oceanica; the Peace collection from Melanesia; the Finsch collection from Polynesia; the Wyman collection of copper and stone implements from Wisconsin; the Boas collection of skulls and skeletons; the Remenyi collection from South Africa; the Pogosky collection from

Siberia; the Lumholtz Mexican collection; the Green cliff-dweller collection; the Harris collection from Peru; the Johnson collection of Irish jewelry; the Ward collection of skulls, skeletons, masks, etc., and the Cunningham collection of brain models.

Naturally much osteological material of great ethnic value was procured along with many of the collections donated by the Exposition, as well as with many of the collections obtained by purchase. As a result the department was in possession of skulls and skeletons from Alaska, the Northwest coast, and several of the Plains tribes; from Ohio, New Jersey, and Arkansas mounds; from prehistoric graves in Costa Rica, Colombia, Peru, Bolivia, and Chile; and through the Boas and Ward purchases many specimens from America, Europe, Asia, Africa, and the Pacific islands.

It should also be stated that in the section of industrial arts and transportation the Museum possessed a large amount of material which might be considered as a part of the anthropological exhibit, and indeed at a later date the section of industrial arts was abandoned and its collections were transferred to the Department of Anthropology.

Thus at the very outset the Department of Anthropology began its existence with many extensive and important collections representing many widely separated regions of the world, and illustrating many and diverse stages of culture and periods of time. Such was the condition of the department in the summer of 1894, six months after the close of the Exposition. The work, however, was only just begun. To be sure all these collections had been installed and the inventory had been commenced; but the installation had been hurriedly performed, many of the collections were in a state of confusion, the records of transfer and the collectors' original lists were more or less tangled, numerous varieties and styles of cases had been pressed into service, collections or parts of collections had been received which were discovered not to belong properly to a scientific museum, and above all great gaps were to appear which must be filled in the future.

Looking back on those memorable six months it seems incredible that so much was accomplished so well, and too much credit can not be given to Dr Franz Boas, who directed the work of installation until April 15, 1894, and to Prof. W. H. Holmes, who became the first curator of the department.

1894-'95

By the time of the appearance of the first report of the director (in October, 1895), the work of reorganization had been begun in a serious manner and an inventory of the material in the department was undertaken. The system adopted was that of the card catalogue and inventory book, and during the year 15,000 objects had been catalogued and over 650 labels printed. In eight of the exhibition halls the cases had been made more serviceable; an additional court had been devoted to anthropology, and many new cases had been provided. Through the generosity of Mr A. V. Armour, Professor Holmes, the curator of the department, visited several of the ruined cities of Mexico and Yucatan, where he obtained about a thousand archeological specimens and gathered considerable data which were embodied in the first two publications of the department. Miner W. Bruce had been outfitted by the Museum and had made a most successful expedition to Alaska, as a result of which the department acquired an extensive and valuable ethnologic collection from the Eskimo. Through President Ayer extensive purchases of interesting archeological specimens were made in Egypt and Italy, and from the Naples Museum were secured 260 reproductions of Roman bronzes. A special hall was set aside for the Egyptian material.

Other purchases during the year included the Keam collection from the Hopi of Arizona, thirty-seven paintings of American Indians by George Catlin, the Berlin collection of Egyptian and Assyrian casts, and the complete outfit of a Navaho medicine-man.

1895-'96

The second annual report of the director contains two statements which so admirably portray the activities not only of the

Department of Anthropology but of the entire Museum, that I quote them: "Expenditures have been made more in the direction of classification than in reinstallation; in working over old rather than in purchasing new material, and in labeling, numbering, and cataloguing specimens." . . . "The great courts have been metamorphosed, not only providing requisite space for the growing collections, but substituting for an installation of the character of an exposition, an arrangement on museum lines."

The inventorying of specimens was continued and to the card catalogue were added over 13,000 entries. The work of labeling was in general interrupted by other more essential work, but Dr Breasted of the University of Chicago was engaged for a limited time and made label translations of the numerous hieroglyphic texts of papyri, grave tablets, etc., for the Egyptian section.

Many important accessions of material were recorded during the year. The curator visited Rockland, Michigan, where he collected a series of flint implements from an ancient copper mine. Mr Bruce was again permitted to visit Alaska, returning with a more extensive collection of Eskimo products than had been obtained in the previous year. The exhibit showing the life of the Romans was further enriched by numerous specimens of bronze, including the two bronze bathtubs and a circular table of remarkable beauty from a villa near Pompeii. An exhibit representing the Etruscan and stone ages of Italy and some Roman terracottas were added through the generosity of Vice-president Ryerson. To the Egyptian collections were also added by purchase and gift many specimens of great interest, chief among which was a bronze sistrum in perfect condition which proved from its inscriptions to have been used in the temple of Ammon at Thebes. An unusually large bronze statue of Osiris is also worthy of special mention. Among other specimens from Egypt were a stone statue of Apet in black basalt, a series of grave tablets and tombstones, and a large number of figurines in faience. From Mr A. V. Armour and Mr Owen F. Aldis were received over 300 objects of great

archeological value from the Valley of Mexico and Oaxaca. A beginning was made in illustrating the antiquities of southern Illinois by the purchase of a large series of flint agricultural implements from W. J. Seaver, and President Ayer again manifested his interest in North American ethnology by presenting a number of specimens illustrating the arts and industries of the Plains Indians.

Mr E. L. Thompson of Merida, Yucatan, became associated with the department and began a series of excavations among the ruins of Xkichmook and Chichen Itza, which in the following year was to yield important archeological material. The staff of the department was further increased by the appointment of George A. Dorsey to the position of assistant curator in charge of physical anthropology. This made possible the work of identifying and cataloguing the material in this division, much of which had remained in storage and none of which had been catalogued, although Dr G. M. West had done effective work during the brief period that he was in charge of the collections at the opening of the Museum.

1896-'97

During the time from October 1896 to October 1897, as we may learn from the third report of the director, much was accomplished. The records of the department, it was realized, demanded heroic treatment, as new material had poured in at a steady rate and the old accessions had as yet by no means been put in creditable condition. Hence the clerical force of the department was increased and the work of cataloguing was pushed forward with all possible speed, especially during the four months preceding October. As a result it was estimated that the card catalogue was increased to the extent of ten thousand numbers.

The only expedition of the department during the year was by the assistant curator. During this field trip several tribes in the west were visited, in the following order: Blackfoot, Blood,

Flathead, Kootenay, Haida, Tsimshian, Hopi, and Zuni. From all these tribes, except one, large important collections illustrating many and varied industries were gathered. From the Blackfeet, Bloods, and Haida was also collected a large amount of osteological material, while a small amount of similar material was obtained from the Kootenay, Tlingit, and Tsimshian. Mr Thompson, who in the previous year had undertaken exploration in Yucatan on behalf of the Museum, continued his excavations at Xkichmook and Chichen Itza, and from both ruins were obtained collections of the utmost value to the student of Mayan archeology.

Mr A. V. Armour placed the department under further obligations to him by presenting a collection of Mexican archeologic objects, comprising notable sculptures, vessels and ornaments in stone and terracotta, and many specimens of copper, clay, shell, etc. From Mr C. L. Hutchinson was received a most timely acquisition to the archeology of Italy, consisting of several hundred Etruscan objects of earthenware and bronze, excavated under the direction of Professor Frothingham. Another gift by Mr Hutchinson consisted of a funeral couch of bone and ivory excavated from a tomb at Orvieto. To the rapidly increasing Egyptian collection were added several interesting specimens in terracotta and stone, a gift of Mr W. M. Petrie of London. The only accession representing American archeology was a gift from Mr Clarence B. Moore of an interesting collection of shell cups and ornaments, earthen vases, and stone implements from mounds of Georgia and Florida. From Mr Gustavus Goward was purchased a small but carefully selected series of specimens illustrating the ethnology of Samoa; while from Mr D. W. Gill were purchased eighteen casts of Peruvian trephined skulls. The curator of zoölogy transferred to the department over 150 ethnological objects which he had collected in Somaliland.

In the matter of installation provision was made for new cases for the Hutchinson collection, and in the division of physical

anthropology the work of thoroughly rearranging the entire osteological collections, begun the previous year, was continued until they had been placed in proper condition. The material on exhibition was all withdrawn, and instead was submitted a series of exhibits, occupying twenty-six cases, showing the normal range of variation of the human skeleton. This was to have been followed by a more extensive osteological exhibit based on ethnic principles. The sections of graphic arts and of monographic arts were abolished during this year and the collections which composed them were transferred to the Department of Anthropology. Thus the department was enriched to the extent of three halls containing important series of exhibits illustrating modern ceramic and textile industries.

At the end of September the curator of the department, Professor Holmes, resigned to accept the position of curator of anthropology in the United States National Museum. George A. Dorsey was placed in charge as acting curator, and four months later was appointed curator.

1897-'98

The office of the curator was removed into new quarters, near the end of the east court, and more convenient to the exhibition halls. The room made vacant by the removal was put in order for exhibition purposes. Three new and much-desired workrooms were also added. Mr C. S. Simms, who had been connected with the Museum from the beginning and for two years with the department, was made assistant curator of ethnology, and seven additional preparators were added to the force during the year. With the force thus strengthened it was possible to make advances in the department which had been already contemplated. The first work undertaken related to the records, and inasmuch as up to that time the department was practically dependent on the recorder's files for information concerning original data for the entire mass of collections, and as the records on file in the recorder's

office were in many instances defective and otherwise incomplete, it seemed best to withdraw temporarily the entire body of records relating to the Department of Anthropology. These were carefully examined, omissions supplied, new accessions added—in short the records were almost rewritten. Duplicates were then made of all the records, and these were retained in the office of the department, which was thus put in an independent position for all existing information in regard to its collections.

Although the department was in possession of a card catalogue that covered nearly all the collections, this catalogue was found, for nearly every collection, to be more or less defective, owing to the fact that the curator had not been able, for financial reasons, to have at his command assistants experienced in work of this nature. In view of these facts it was decided to begin the catalogue anew, taking the cards of one collection after another and putting them in order, adding, changing, correcting, and often entirely rewriting them. Thus, including the additions to the card catalogues which were made from new accessions, there were handled 41,989 cards during the year. As rapidly as the card catalogue of any given collection was completed, it was referred to the assistant in charge of the records to be entered upon the inventory books and then to be filed away in numerical order according to the number of the accessions.¹ In this manner over 200 separate accessions were catalogued, occupying 17,960 entries in the inventory books.

The accessions of the year were many and important. The only expedition by any member of the staff of the department was that of the curator to the Hopi Indians of Arizona. On this trip he was accompanied by Mr Melville, and the object was to make plaster casts of certain Indians for use in the construction of ethnic groups, and to obtain the proper accessories thereof,

¹ The method adopted for cataloguing and inventorying specimens, and of filing and indexing accessions, was fully described in a paper on "The Anthropological Museums of Central Europe," *American Anthropologist*, N. S., vol. I, 1899, p. 473.

such as clothing, domestic utensils, etc. In both respects the expedition was entirely successful. Additional casts of aborigines for ethnic groups were also secured under most advantageous circumstances through the presence in Chicago of a party of Eskimo from Port Clarence, Alaska, under charge of Capt. M. W. Bruce, who had just returned from that region with the third consignment of Eskimo material. In this latter collection was an especially large number of fine specimens of ivory and jade implements. The largest and most valuable accession of the year was that obtained by President Ayer in Egypt and Italy. This included a large number of mortuary tablets and tomb fronts covering a long period of Egyptian history, many beautiful and costly specimens of Egyptian and Etruscan jewelry, some unusual bronze statues, and two very remarkable stone tombs of the early Etruscan period. The textile collections were further enriched by several hundred fabrics, representing the fifteenth to the eighteenth centuries. These specimens were collected in Venice by Vice-president Ryerson, who presented them to the department. From Rev. T. W. Woodside, a missionary to Portuguese Southwest Africa, was acquired an extremely interesting collection illustrating the manners and customs of the Ovimbunda, a minor division of the great Bantu stock, and not hitherto represented in the Museum. The Polynesian collection was augmented by the purchase from W. T. Shephard of over 600 specimens. In the division of physical anthropology more than 150 skeletons were accessioned, the most important single collection being one of fifty-two Papuan skulls from Gazelle peninsula, New Britain, received in exchange from Dr Parkinson.

Much new installation was recorded for the year. Twelve new cases were added to the north court, devoted to European archeology, six of which were installed with the contents of Etruscan tombs. The east court was entirely reinstalled with material relating exclusively to American archeology, all collections not relating to that subject being transferred to their proper positions.

Hall 7 was emptied of the paper images from a Chinese joss-house and was renovated and prepared for the reception of new material. The contents of Halls 16 and 17 were reinstalled. In the former were placed new cases after a standard design at that time adopted for the department. Hall 17 was also equipped with new standard cases and was devoted to the ethnology of the Hopi. A large group representing a Hopi domestic scene, and four smaller groups representing certain religious customs, were added to the hall. In connection with the work of installation it may be noted that 2270 printed labels were placed with the specimens.

1898-'99

Dr Breasted of the University of Chicago was again employed for a limited time to prepare translations of Egyptian hieroglyphics for labels, and in January the services of Rev. H. R. Voth were enlisted in preparing labels for and in assisting in installing the Hopi collection.

The work of cataloguing and inventorying collections was industriously carried forward; as a result the card catalogue was increased by more than 10,000 numbers, and in the inventory books 15,912 entries were made.

As in previous years the accessions were both numerous and important. To increase the exhibits showing the methods of the manufacture of flint implements, the curator made two expeditions to aboriginal flint quarries. The first was to the Mill Creek quarry, Union county, southern Illinois, where over 2000 specimens were collected, showing every stage in the manufacture of twelve specialized types of implements. This great quarry is of unusual interest, as here were made the great flint agricultural implements, of several forms, which in size and beauty are among the most remarkable known to archeologists. The quarry is also of great interest inasmuch as there were developed, in the excavation of the raw material and in the manufacture of the immense imple-

ments, special forms of mining tools, hammers, and grinding and polishing stones. The second expedition was to the great chert beds on the Peoria reservation, Indian Territory, where nearly 400 specimens of unfinished implements, hammer-stones, cores, and flakes were collected. During the summer the curator also made an extended expedition in the west, visiting first the cliff-ruins of Walnut canyon, Arizona. From there he went to Ukiah, Mendocino county, California, where, accompanied by Dr J. W. Hudson, local ethnologist, he visited several tribes of the Pomo or Kulanapan stock in Mendocino and Lake counties. The result was a collection numbering over 300 objects of ethnologic interest, and representing nearly every phase of native life. From Ukiah he proceeded to Tacoma, Washington, where he was joined by Mr Melville and his assistant. Through the coöperation of the Ferry Museum of Tacoma, casts of nine individuals were made which were intended for ethnic groups to show the native industries of the people of Puget sound. Incidentally the Nasqually, Puyallup, Muckelishoot, and Fort Madison reservations, and native settlements on Cedar river and at Squauk were visited and many objects of ethnographic interest were obtained. The expedition then proceeded to Vancouver island, where additional casts were made for ethnic groups of the Kwakiutl.

By purchase the department procured a collection of 380 stone and flint relics from Putnam county, Ohio, a collection of over 200 objects from the Sioux, a collection of over 100 specimens from the Cheyenne and Arapaho, and a most interesting collection of sixteen mural panel decorations and other specimens from Hadrian's villa. Through exchange with Mr David Boyle, curator of the Toronto Museum, there was secured a valuable collection illustrating the archeology of Ontario; and by a similar method a full and complete series of tools, nodules, flakes, cores, etc., illustrating the method of the manufacture of gun-flints at Brandon, England, was obtained from Dr J. W. Phillips of Northwestern University, Evanston.

Of the many accessions to the department by gift, two deserve special mention. The first was that of Mr Stanley McCormick, who presented a collection of over 1600 specimens illustrating every phase of the past and present life of the Hopi Indians of Arizona. This collection was formed by Rev. H. R. Voth during many years as missionary among the Hopi, and is one of the most complete and representative collections ever assembled from any one tribe. Of the many excellent series comprised by the collection, of special interest are the dolls or *tihus* representing *katchinas*, masks of *katchinas*, *bahos* or prayer-offerings, stone implements, tools and utensils representing every known form, and a large number of specimens of so-called cream-colored pottery excavated from Hopi ruins, and especially valuable for the symbolism represented. Through Mr McCormick's generosity the department was also enabled to profit by Mr Voth's services for fourteen months in the preparation of a complete series of labels for the collection, and also in the construction of certain altars and sand mosaics which play so important a part in Hopi ceremony. Mr McCormick's liberal provision for this work was most timely, for the Hopi, who for over two hundred years have successfully resisted the encroachments of the whites, seem about to be entering upon the period of unrest and innovation which usually precedes the breaking up and gradual abandonment of the strictly aboriginal way of life.

The second donation, of almost equal importance, was that of President Higinbotham, who presented a Korean ethnological collection of over 500 specimens, comprising many jade objects of rare beauty and workmanship; bronze utensils; clothing and uniforms, including head- and foot-gear representing every station of life; armor and implements of warfare, personal ornaments, etc.

The work of reinstalling all the exhibition halls of the department and providing them with new cases, begun in the previous year, was carried forward as rapidly as time would permit. The acquisition of the McCormick Hopi collection, together with the

altars in process of construction, necessitated an additional hall, hence two halls hitherto devoted to South American archeology were vacated and into one were removed the ethnological collections from Venezuela, British Guiana, Brazil, and Paraguay, newly installed the previous year, and in the other were displayed the remaining ethnological collections from South America, chiefly from Peru. The room thus vacated (Hall 16) was then devoted to an exposition of Hopi ceremonies, the other Hopi hall containing the archeological collections and those objects which pertain to every-day life. The halls (10 and 11) devoted to the Eskimo were entirely rearranged, new cases being supplied and a new installation made. They were also furnished with four groups, from life casts, illustrating certain phases of specialized Eskimo life. From Ayer Hall were removed all specimens not having their origin in the Indians of the Great Plains, and in their stead were substituted other specimens from the Great Plains tribes, acquired by purchase or exploration. These changes made a new arrangement of Ayer Hall necessary, and this was done along the lines of ethnic division. The addition of much new archeologic material and the transfer of the prehistoric collections from South America necessitated some few changes in the east court, and made possible its complete installation, when it contained all the collections relating to American archeology. In connection with the general work of installation, over 3400 printed labels were placed with the specimens.

In September the curator was permitted to visit the chief museums of central Europe, where many valuable ideas in regard to museum management were obtained and negotiations were entered into for the acquisition of material illustrating the prehistoric archeology of Europe.

October, 1899, to March, 1900

During these five months work of a progressive nature has been conducted, such as characterized the year last described.

The card catalogue has been increased 10,523 numbers, and 6136 entries have been made in the inventory books. The event of unusual importance has been the additional interest manifested in the department by the gift of Mr Stanley McCormick of \$5000 for the purpose of making more complete the Hopi exhibit. Under this fund two expeditions have already been undertaken. Mr J. A. Burt spent nearly two months in the exploration of several Hopi ruins along Little Colorado river, Arizona, and as a result the exhibits showing the ancient life of the Hopi have been increased by over 300 fine specimens of pottery, bone, stone, shell, and textile fabrics. Part of Mr Burt's time was spent in examining ruins hitherto not represented in scientific museums, and while the full significance of his discoveries is not yet determined, it is safe to say that new factors have been added to our knowledge of the early movements of certain Hopi clans. The second McCormick expedition was that of the curator and Mr Voth in December to six of the Hopi pueblos, at which time notable additions were made to the collections devoted to the modern life of their occupants. While these additional specimens cover nearly every phase of activity, of special interest are the series of rare dolls, masks, prayer-sticks, and pipes. By the provisions of Mr McCormick's gift the department is enabled to retain the services of Mr Voth until the new specimens are labeled and until certain additional altars are constructed. Provision is also made for further explorations of Hopi prehistoric ruins, especially of those not yet represented in the Museum's collections.

In February the assistant curator made a visit to the Grand River reserve, Ontario, where he witnessed the complete ceremony of the sacrifice of the sacred white dog by the pagan Iroquois, and obtained an interesting collection of ceremonial paraphernalia, including about twenty of the masks worn in the dance. Material of this nature was not hitherto represented in the Museum.

The most important recent accession by purchase has been the Perrine collection, consisting of nearly 3000 specimens of

stone, pottery, shell, and bone. This collection was made by Mr T. M. Perrine about twenty years ago in the mounds and on the village and quarry sites of Union county, Illinois. It includes many of the finest chipped and polished stone implements ever brought together from this interesting region. Of unusual beauty are several very large specimens of polished chipped flint, a number of so-called bannerstones, stone pipes (one being of remarkable interest), and a large series of hematite adze blades. But the most valuable single object of stone is a statue of human form, of which a cast is figured in Wilson's *Prehistoric Art*,¹ p. 481.

Of pottery there are over a hundred specimens illustrating the characteristic forms of the region. In shell there are among other objects three gorgets, one a beautiful specimen of the spider effigy, the other two with a cross, one of the latter being figured in Holmes' *Art in Shell*.² A collection of over a thousand objects from prehistoric graves at Caldera, Chile, was acquired by gift from Mr Cyrus H. McCormick. Included in this collection are very interesting series of bone carvings, copper and gold ornaments, and a large number of the most beautiful spear- and arrow-points of jasper and chalcedony that are to be found in the department. The special value of the collection lies in the fact that hitherto the Museum possessed no collections illustrating the archeology of the western coast of South America south of Iquique, save a few specimens from Huasco.

In the work of installation, the last five months have been productive of much that is of a progressive nature, and one feature of the work is characteristic of the more recent trend of development in the Museum as a whole. I allude to the fact that Halls 8 and 9, which, since the establishment of the Museum, have contained the material transferred from the Exposition and known as the Columbus Memorial, have been emptied of their

¹ *U. S. National Museum Report*, 1896. Dr Wilson in this paper erroneously calls the original a clay statue.

² *Second Annual Report of the Bureau of Ethnology*, p. 270.

contents and are now being installed with purely anthropologic collections. Hall 9, one of the four largest in the building, is already installed with the Egyptian collections, while Hall 8 and the hall made vacant by the transfer of the Egyptian collection are to be devoted to the continually increasing collections illustrating the culture of the more primitive non-American races.

The two halls devoted to the ethnology of the Northwest coast of America have also been dismantled, and the collections have been carefully examined and the objects compared with collectors' original lists, all preparatory to a reinstallation in new cases in the same halls, to which will be added four ethnic groups, for which casts have already been made, illustrating certain phases of the domestic and religious life of this very interesting and complicated region.

Among the improvements which are to be made in the near future, provision is already made for the reinstallation of the contents of Ayer Hall (devoted to the tribes of the Great Plains) in new cases and with the addition of three illustrative ethnic groups, for which casts for one of the Cheyenne are already made, and the complete overhauling of five halls, devoted to Old World ethnology, with the expansion and reinstallation of their contents into seven halls.

With the changes and improvements noted above an accomplished fact, the exhibits which comprise the department will be classified according to locality or people; they will be in plain, simple, substantial cases, safe from the ravages of dust and moth. But the work of the department will not be finished, for, has not Prof. G. Brown Goode declared that a finished museum is a *dead* museum? It is recognized that there are vast regions of America, and even one entire great continent and many regions of other continents, which are but poorly represented or not represented at all, and to these regions must be directed the energies of the future, if the high educational objects of the Museum are to be adequately fulfilled.

BASKETRY DESIGNS OF THE MAIDU INDIANS OF CALIFORNIA¹

By ROLAND B. DIXON

The baskets from which the accompanying designs are taken were collected among the northern portion of the Maidu Indians of California, during the summer of 1899. The region has been of late years more or less thoroughly scoured for baskets by various local dealers, and by several traveling salesmen, who have become victims of the "basket craze." A considerable number of old baskets of very good workmanship were found, however, and new ones made for trade, and for the annual "burnings" held in memory of the dead, were numerous. The materials of which the baskets are made varies somewhat from place to place, and with the kind of basket. The large pack-baskets, conical in shape and with a capacity of a bushel or more, are generally made of the smaller twigs of the maple or willow, the roots of the yellow pine, and the stems and roots of the common brake (*Pteris aquilina*). The soup baskets and smaller saucer-like baskets are finer in texture and weave, and are made of maple, redbud, and a sort of grass or sedge known as *tsi'takim*. In the lower foot-hills and in Sacramento valley, willow is used a little more commonly than in the higher Sierra, and the twigs and wood of the "basket-wood" are used in place of or with the redbud. The patterns are either in red or black, the redbud and "basket-wood" being used for the former, and boiled pine-roots or brake for the latter. The soup baskets and tray-like baskets are of the variety known as "coiled"; the large pack-baskets, on the other hand, being "twined."

¹ Published by authority of the Trustees of the American Museum of Natural History. The designs illustrated are from specimens in that Museum.

In the series of forty baskets nearly two dozen different designs are used. For about twenty of these satisfactory explanations have been obtained up to the present, and these may be divided for convenience of treatment into three classes — animal designs, plant designs, and those representing objects such as arrowpoints, mountains, etc.

One of the simplest and clearest of the many designs belonging to the first group is that known as fish-teeth (figure 8). The execution of this pattern is rather irregular, and it is somewhat difficult to determine whether it was intended to have the cross-bars opposite each other or alternating. Looking at the basket from below, the resemblance to the wide open mouth of a fish is rather striking.



FIG. 8—Fish-teeth (Cat. No. 34).

A little less obvious in its meaning is the earthworm on a

basket from the same locality as the last. In this (figure 9) the worm is represented by a succession of parallelograms, linked together by the corners, to form a sinuous chain running around the basket. The separate parallelograms here are said to stand for the segments of the earthworm's body.

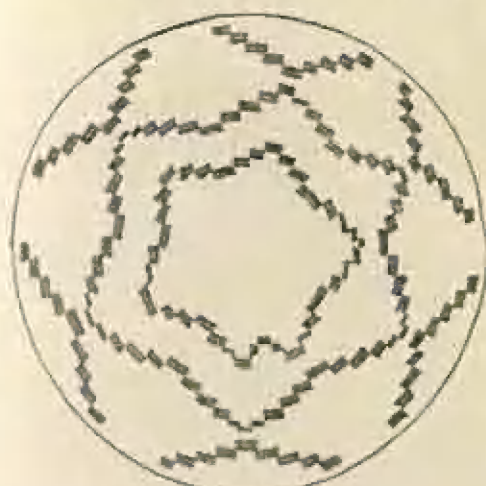


FIG. 9—Earthworm (Cat. No. 34).

Of very frequent occurrence on baskets from Sacramento valley and the foot-hills is

the design representing the quail (figure 10). In this the characteristic feature is the plume on the quail's head, shown here by



FIG. 10.—Quail (Cat. No. 455).

the vertical square-tipped appendices to the parallelograms which are meant for the bodies of the birds. The quail-plumes themselves are used at times in the decoration of the feather-baskets, being woven in while the basket is being made, and standing out all over

it when done. The use of the bird's plumes does not, however, seem to have been restricted to baskets which had the quail design.

Two other designs are representations of birds, the "geese flying" and the "duck's wing." One form of one of these designs

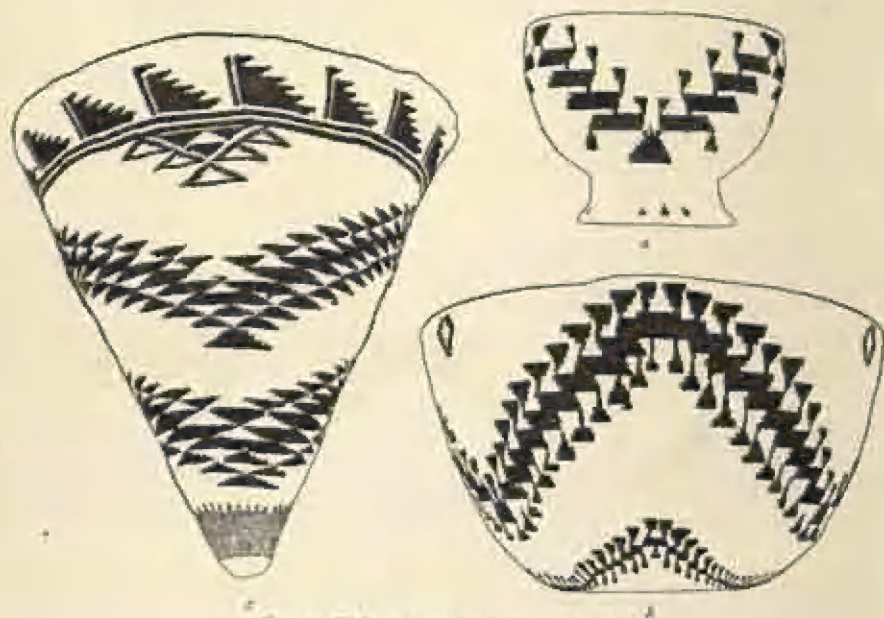


FIG. 11.—Flying geese (Cat. Nos. 456, 457, 458).

(figure 11c) is apparently meant for a flock of geese in flight, their triangular order being well shown in the arrangement of the points of the design. The other two forms (figure 11a, b), said also

to be "geese flying," are not quite so clear as the first. That numbered 116 is curiously like the quail pattern already described, except that the appendices are triangular instead of square; it is possible that these may refer to the feet of the goose seen just as the bird lights (7). The design known as the "duck's wing" (figure 12) is more or less doubtful in its meaning. It is said to signify the patch of white seen on each side of the bird.

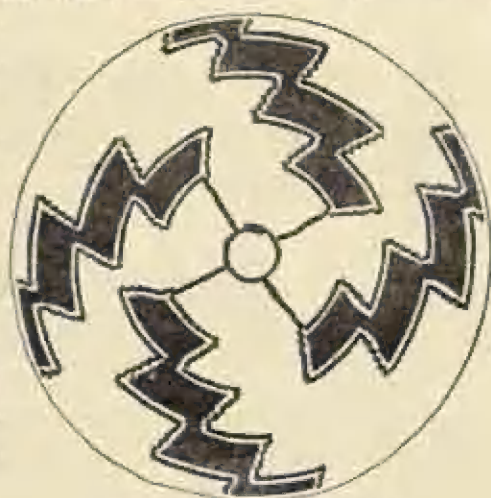


FIG. 12—Duck's wing (Cat. No. 46a).

Very clear in their meaning are the designs representing the "thousand-legged worm" and the racoon. The millipede or "thousand-legged worm" (figure 13) is shown by a broad band of solid color running in a zigzag around the basket and provided all along both edges with a great number of small triangles attached by short narrow lines, forming thus a sort of fringe. These are, as might be supposed,



FIG. 13—Millipede (Cat. No. 46a).



FIG. 14—Racoon (Cat. No. 46b).



FIG. 15—Grasshopper leg (Cat. No. 46c).

the many feet of the millipede. The characteristic feature of the racoon design (figure 14) is in the peculiar curve of the band of color which runs around the basket. This is said variously to stand for the stripes on the animal, or for the *os penis*; in either case the intent of the pattern is clear.

Rather less realistic than the foregoing designs is the grasshopper pattern, found on a small basket from Genesee (figure 15). This might more properly be called the grasshopper-leg pattern,

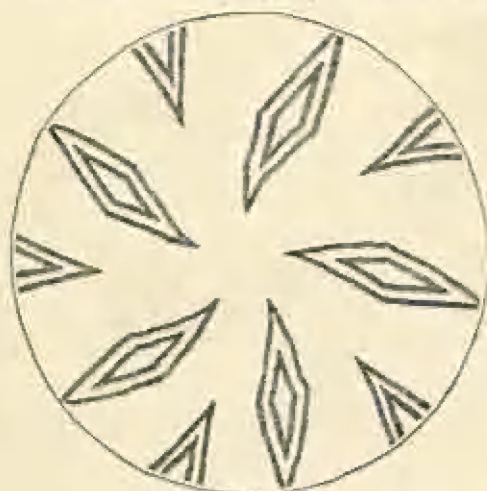


FIG. 16—Eye (Cat. No. 755).

as this is the part of the insect which is represented. Apparently the longer bars are the legs, and the shorter bars at right angles to the former are the "feet" (7). Classed with the animal designs for convenience is the pattern known as the eye (figure 16). This is represented simply by a hollow rhombus or diamond.

Turning to the second group of designs, those representing plants, it is evident that here the number of different patterns is considerably less than in the first group. On a number of baskets

is found a design of which the only explanation that could be obtained was that it was "just a flower." This design (figure 17) consists of rows of broad-based triangles, each row from the base to the top containing successively larger triangles.



FIG. 17—Flower (Cat. No. 761).

In the specimen figured the design is not perfectly regular, but the pattern is sometimes made with great regularity.

and the triangles arranged in a kind of whorl, giving a curious effect when the basket is seen from below. The triangles here represent the separate petals of the flower.



FIG. 18—Brake (Cat. No. 44).



FIG. 19—(Cat. No. 45).

The common brake (*Pteris aquilina*) is represented by the design shown in figure 18, from a basket from Mooretown. The

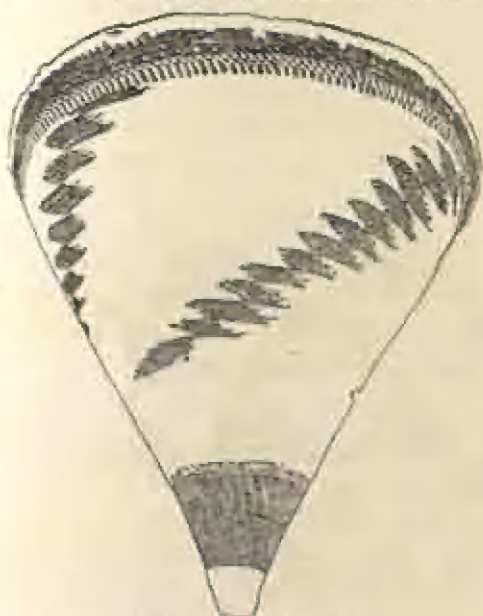


FIG. 20—Vine (Cat. No. 46).



FIG. 21—Pine-tree (Cat. No. 47).

points in this are intended for the pinnæ of the fern, but the meaning of the bars in the central stripe is not yet clear.

Closely resembling this pattern is one from the Konkau (figure 19), but of this I have not been able to obtain a reasonable explanation. Very similar also is the design said to depict the vine (figure 20). In this the spiral character of the pattern as it

winds around the basket is the twining of the vine about a pole, while the points are the separate leaves as they stand out on either side.



FIG. 19.—A bush (Cat. No. 225).

One of the most effective plant designs is that of the pine-cone, used by the people of the

higher Sierras. In this design (figure 21) the realism is quite marked, the broad, pyramidal form and the horizontally directed points being strikingly like the large and strong-spined cones of the digger and yellow pines. Although the digger pines grow in large numbers on the foot-hills, no specimens of this design were seen except in the higher portions of the mountains. What is apparently the same figure cut in two is represented around the upper edge of the large pack-basket on which the full design is shown.



FIG. 21.—Feathers (Cat. No. 225).

Similar to the cone, but differing in that it has a solid center, is the

pattern found on a basket from Big Meadows (figure 22). This is regarded as the representation of a bush, growing high up in the mountains, and apparently rather rare, as I was unable to get a specimen to identify the plant.

Of the designs representing objects belonging to the third group into which the different patterns were divided, that of the feather is by far the most important. It seems to occur in several different forms. The simplest of these, perhaps, is shown in figure 23. The characteristic feature of the design appears to be the notched or sawtooth edge, in imitation of an old custom of thus notching the arrowfeathers by burning. In figure 24 the design appears in a slightly different form, the notched



FIG. 24.—Feathers (Cat. No. 45).

"feathers" being arranged in points around the basket. A variation of this design is shown in figure 25, where the interior of the point is filled with a somewhat elaborate pattern, and again in figure 26 where this interior pattern is different in each point. There is reason to believe that these isolated triangles are meant to represent flint arrowpoints, a design which alone is very frequently

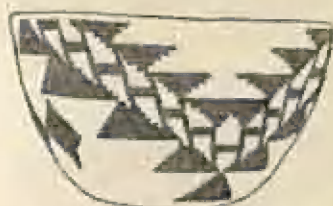


FIG. 25.—Feathers (Cat. No. 46).



FIG. 26.—Feather (Cat. No. 47).

met. The association of the arrowpoint with the arrowfeather would not be an unnatural one, and till further evidence is forthcoming it may be considered that in the designs shown in figures 25 and 26 there is a combination of the feather pattern with the flint arrowpoint.

The flint arrowpoint design as it occurs alone is seen in figures 27 and 28. The triangles which make up this figure are linked together in a way different from those making the feather designs, and the longer axes of the triangles or rhombuses are vertical instead of horizontal.

The simple circular band of color surrounding the basket is



FIG. 27.—Flint arrowpoints
(Cat. No. 251).



FIG. 28.—Flint arrowpoints
(Cat. No. 252).

said to be a path or trail (figure 21). It does not seem to be of very frequent occurrence, and in all the specimens seen is a complete circle, without the gap so common on baskets and pottery from the Southwest, as also among some of the California tribes, of which the Yuki may be taken as an example.

A rather elaborate composite design representing mountains and clouds (figure 29) is shown on a basket from Big Meadows. Here the mountains are represented as a range in perspective, the short vertical lines being trees growing on the slopes. Above these mountains, and running all around the upper edge of the basket, is a zigzag line signifying clouds floating over the summits of the mountains.



FIG. 29.—Mountains and clouds (Cat.
No. 253).

This completes the list of designs of which the meanings are certain or reasonably so. Taking each group by itself, it appears that the largest number of designs are representations of animals,

fully half of those here described belonging to that group. Plants and inorganic objects are shown in the designs in about equal numbers, both together about equaling the animal patterns. In frequency of representation, on the other hand, the feather design seems to preponderate; that is, this pattern will be found on a larger number of baskets than any other. Comparing the people of Sacramento valley and the lower foot-hills with those of the higher Sierra, there is possibly a little greater frequency of animal designs among the former. Certain patterns, such as the feather and the arrowpoint, are found among all the communities thus far visited, and seem to be of universal distribution at least among the northern members of the Maidu or Pujunan stock. Other designs, such as the pine-cone and the geese, are, so far as known, confined to the higher Sierra, while the fish-teeth and earthworm seem rather restricted to Sacramento valley and the foot-hills. Further investigation, however, will be necessary before the details of the distribution of the designs can definitely be stated. But even where the same design is found in several places, there seem to be local differences which are more or less constant.

In comparison with the designs on the baskets of neighboring tribes, a few words may be said: The geese and the feather designs have been recognized on baskets made by the Pitt River Indians. The latter come at times to Big Meadows and Susanville, and the Maidu at present often buy from them some of their baskets, which are much softer and more flexible than their own. In his paper on "Textile Art in Relation to Form and Ornament"¹ Holmes illustrates a basket (fig. 324) on which both the feather and the geese designs, or at least patterns closely comparable, appear. This basket is described as from the McCloud River Indians, belonging to the Wintun stock, which here, however, is in close contact with the Pitt River tribes. Quite comparable also to the feather design is that shown by Mason from baskets belonging to the Ute Indians of southern

¹ *Sixth Annual Report of the Bureau of Ethnology*, fig. 324, p. 221.

Colorado.¹ No mention is made by either Holmes or Mason of the meaning of the designs which they figure, but the close similarity of the pattern from McCloud river to those of the Maidu and Pitt River Indians is at least striking. The simpler pattern on the Ute baskets, though strongly resembling the simple form of the Maidu feather design, is in all probability different in its origin and explanation. Designs quite similar to some of the Maidu patterns are also to be noted on baskets from the Hupa and other tribes in northern California, and among some of the coast tribes of Washington and Oregon.

As already stated, the twenty or more designs here shown do not by any means exhaust the list. With the considerable number which are not as yet satisfactorily explained, and those seen uncompleted on unfinished baskets, it is probable that the present list can be doubled; and it would not be surprising to find as many as fifty distinct designs used on their baskets by Indians of the Maidu stock. The knowledge of the designs is almost exclusively confined to the older women, the younger generation knowing only very few; therefore, unless the meaning of these many designs can be obtained before the death of the older generation, in this as well as in other tribes of the state, a valuable aid in the unraveling of the relationships between the many stocks of California will be lost.

¹ "Basket Work of the North American Aborigines," *Report of the U. S. National Museum*, 1883, pl. XXII, fig. 43; pl. XXV, fig. 48.

MYTHICAL MONSTERS

By D. S. LAMB

WITH DISCUSSION BY MISS J. O. HALL AND F. A. LUCAS

The myths of a people may be classified as those which have some historical basis, howsoever slight, and those which are possibly if not probably purely creations of the imagination. We might make a similar classification of modern fiction.

Myths which are essentially of the same nature, having the same actors with approximately the same names, would seem to have been first formed in some one locality and spread thence through emigration or by the capture and enslavement incident to war. The original significance of such a myth may be lost through a change in the meaning of a word.

There are also myths which are nearly identical in character the world over, irrespective of tribal or racial descent. This similarity seems to be explainable most probably by the fact that all primitive peoples pass through the same stages of development, regardless of language or geography; the myths of corresponding stages would therefore naturally correspond to each other in essential features, the main difference being in the proper names due to differences in language. For instance, some primitive peoples have a theory of creation by a union of the heavens as the male element with the earth as the female element.

One of the most striking and familiar qualities of the primitive human mind is the disposition to personify. Eventually this personification becomes fixed in the written language, either by the use of a particle indicating sex or by a change in the termination of a word indicating the same thing. With the exception of

the English, there is probably no modern language in which these personifications do not occur; and even in the English, poetic license, as it is called, justifies, for example, the use of *him* for *it* in speaking of the sun, while in ordinary conversation we speak of *it* instead of *him*. Among primitive peoples every material thing, every action, and every form of thought had its deity or demon. If we divide everything, visible and invisible, actions and modes of thought, into good and bad, helpful and hurtful, we shall find that almost without exception the good or helpful things were personified by forms that are natural or normal and comely, and the bad or hurtful by forms that are unnatural (so-called), abnormal, and uncomely, perhaps even hideous and monstrous.

In personifying the bad or hurtful, the primitive mind has chosen one of two kinds of forms. In one there is a mixture of forms of altogether different animals; as in the case of the Satyr with its human head and body and its goat-like limbs and horns. In the other kind there is no such mixture, but either something is added to the normal, as in the case of the three-headed dog Cerberus, or something is absent, as in the case of the one-eyed Cyclops.

There can of course be no question that the personification by natural forms, as we call them, was based on the knowledge of such forms and their qualities—a greater or less familiarity with them. So far as the forms themselves were concerned, therefore, there was no need to draw on the imagination for them. In different countries having different fauna or flora the personifications would of course differ.

The question, however, may be asked whether the so-called unnatural, abnormal forms ever existed, were ever seen by primitive man, or are visible at the present day. This is the question I propose to consider.

A mixture of forms of two entirely distinct orders or families of animals is never seen, and, it is fair to conclude, has never been seen, for we know that such forms cannot indeed occur. Were

these forms, then, as personifications, purely creatures of the imagination, or did primitive people actually see some forms which they interpreted as such admixtures? If I were to judge from individual observation I should say that they did; that such forms are seen to this day and by many persons are similarly interpreted. For many years I have been connected with a museum, the work of which is to collect specimens of abnormality, disease, and injury. In this collection the malformations have a conspicuous place, and the number is steadily growing. They are called malformations because they are deviations from the normal forms—deviations due to a departure from the normal laws of development—the carefully studied and fairly well-known laws of the science of embryology. From time to time there have been brought to the museum animal forms which those who brought them interpreted as mixtures of animals of different orders. Examination of these specimens always showed that they were peculiar only in the fact that they had undergone some injury either before, during, or after birth, for they were always young animals. As an illustration I may mention the last occurrence of this sort: Two ladies came from Baltimore bringing a jar containing a small animal of very peculiar appearance. I was told that it was part cat and part bird, and had been long kept in the office of a Baltimore physician and shown to many persons. The object of the ladies in bringing it to the museum was to learn if we would purchase it, and at what price. I told them that if the specimen was really a mixture of cat and bird the museum would be glad to obtain it and, I had no doubt, to pay a large sum for it. I might have told them that such a specimen would be worth its weight in gold. Examination showed it to be a poor little kitten which in birth had been roughly divided in two behind the forelimbs, and the torn part had been drawn out somewhat pointedly as if by the same force; the part belonging to the hind-limbs was absent. I so thoroughly convinced them that I was correct in my statement that they left the specimen with me as not being worth

carrying back. If in this age and in the city of Baltimore and among educated and intelligent persons, unusual animal forms can be interpreted as mixtures of two or more different divisions, why should we doubt that among primitive peoples similar mistakes were made? It is true that there are cat-birds; but they are simply birds having the peculiar cry of a cat. I might add that the museum also receives from time to time "descriptions" of so-called mixtures which the writers offer for sale at high prices, but which of course the museum never buys.

At this point it may be mentioned as a matter of fact that such peculiar forms as I have described, as well as the real malformations, are regarded by many ignorant persons of our own day, and presumably also among primitive peoples, as being of supernatural origin; as having resulted through the interference in some manner by the Deity or the Devil. So strong is this feeling, indeed, that in many cases these persons insist on the burial of such human forms when only of a few months prenatal development, for fear of evil consequences. For this reason it is at times impossible to obtain for exhibition in the museum quite desirable because unusual malformations. Such persons, if they lived in so-called heathen lands, would doubtless make deities or demons of such forms; and I am quite convinced that this is what some primitive peoples at least have always done with them. It may be noted as a partial explanation of some of these mythical mixtures that there are many animals of strikingly peculiar forms, appearances, or habits. These would strongly influence the primitive man. It would seem but natural that he would interpret the peculiarities in a supernatural way; and so these animals might suggest the idea of admixture of different forms. The folklore of these animals is interesting in this connection. The little mantis, or *prie Dieu*, or rear-horse as it is called in this vicinity, may be mentioned. We must also consider such appearances of animals, as the wise and solemn look of the owl, which has passed into popular adage; the cry of the

panther, so intensely like that of a lost infant; these would naturally suggest the presence of some human element in the animal; and it would not be far to go to build thereon a mixture of forms. The striking transformation from caterpillar to butterfly, and the scarcely less striking one from tadpole to frog must have had influence in giving shape to mythologic forms. It would certainly seem to be most probable that the myth-maker would have such things in mind in creating his myth, and not evolve it entirely from his imagination.

I may add that there are animals born so malformed that the ordinary observer would not recognize anything about them as natural. Nothing less than the study of embryology can explain their peculiarities. There would be no stretch of imagination to see some kind of mythologic monster in such animals.

Some of these mythologic combinations may be mentioned: One of the best-known is the Centaur, with the head and neck of a man and the body and limbs of a horse. These creatures were said to inhabit the mountainous parts of Arcadia and Thessaly. According to one writer they were the only monsters of antiquity which had good traits. If this be true they are the only departure from the opinion I have advanced, namely, that bad and hurtful things were represented as monsters. Various explanations have been given of the myth: perhaps the most reasonable is that the being personified the clouds through which the sun had to force his way.

The Chimera, with lion's head, goat's body, and dragon's tail. There were three heads, each breathing out fire. She was mother of the Nemean lion and the Sphinx. She is said to have personified drought, and was destroyed by Bellerophon, mounted on the winged horse Pegasus.

The Harpies, with women's heads and bodies, wings and claws of birds. They were robbers, more especially of food, which they also befouled. In earlier myths they were said to carry away the soul at death. They personified hurtful winds.

The Minotaur or bull of Minos, with the head of a bull and the body of a man; a terror of the island of Crete; destroyed by Theseus.

The Satyr, with the body of a man, and the legs, hair, and horns of a goat. They were male divinities of the woods and fields. The god Pan was of this form, and is sometimes included among the Satyrs.

Scylla, a woman with six heads; her limbs those of serpents and barking dogs; she lived near the rock-bound sea; fed on the sailors who passed by, and also on fish. She personified treacherous and shallow waters among hidden rocks.

The Sphinx, with woman's head and upper part of body; the remainder, a bird's wings and claws; or, as in Egypt, the body and limbs of a lion. She was killed by Œdipus, or committed suicide by throwing herself into the sea. She devoured those who failed to solve her riddle: "What is that which is four-footed in the morning, two-footed at noon, three-footed at night?" Œdipus solved it as a man who goes on all fours in infancy, and in old age has to use a staff. The word *sphinx* is Greek, meaning "one who binds." The Sphinx personified drought—the binding up of the waters.

The Triton was half man and half fish; offspring of Neptune and Amphitrite; his progeny were called tritons. They personified the dangerous sea.

The Typhon, with a hundred dragon-heads, the son of Gæa, the earth. He was confined in Tartarus.

The Sirens, with heads and bodies of women and legs of birds. Their song drew the sailors toward dangerous rocks and reefs and destroyed them. They probably personified dangerous winds.

In Egyptian mythology many mixed forms appear. Pabkt-Bast was a goddess sometimes with a lion's head, at others with the head of a cat. Sep, the god of earth and vegetation, bore the body of a man and the head of a goose. Hathor, or Athor, with

the head of a cow, a goddess often identified with Iris. Seth, or Set, with the body of an ass, a jackal's ears and snout, and a lion's tail, was the principle of physical and moral darkness and evil. Neph, called also Chumphis, Khnum, Num, and Nu, had the head of a ram; he was the soul of the universe.

We come now to true malformations, not the results of external injury, but of faulty development—of some intrinsic or extrinsic interference during development. Malformations have been experimentally produced, especially in the case of hen eggs, by various interferences during the 21 days of incubation. There is no need here to elaborate the subject; it is sufficient merely to state a fact familiar to embryologists. These malformations are common, both in the human and in the lower animals. Their causes are to some extent understood, especially in view of the fact that they have been artificially produced. Similar forms must have been seen by primitive as well as by civilized peoples in all ages and in all countries. The tendency to deify or demonize them may correctly be assumed, I believe, from what has already been said. If we bear this in mind it seems but natural that the malformations and monsters of mythology were the outcome of this deifying tendency.

I have already said that these malformations were either by defect or by increase, as in the case of the one-eyed Cyclops or the three-headed Cerberus. This would hardly be the proper place and time to enter into a discussion of the laws which govern their production. I can speak only of the forms themselves.

As illustrating an increase in size or in the number of parts, without any mixture of forms, the following may be mentioned:

The Centimanni, or, in the Greek, Hecatonchires, with a hundred hands; sons of Uranus and Gæa, that is, of Heaven and Earth. One was named Cottus, the striker; the second, Briareus, or the strong; the third, Gyes or Gyges, the wrestler. All were confined in Tartarus. They probably personified the waves and breakers.

Cerberus, a dog with three heads; sometimes represented also with the tail of a serpent; he guarded the gate to Pluto's dominions, permitting no spirit to pass out. The personification of drought, darkness, and the underworld.

The Hydra of Lerna, a serpent with many heads, sometimes seven, at others nine, at others fifty. It was slain by Hercules.

Janus, with two faces turned in opposite directions; sometimes one was white-bearded, the other was youthful; he was also sometimes represented with three or four heads. A Roman divinity, unknown to the Greeks; the god of gates and beginnings; knew the past and future as well as the present; an emblem of the sun which opens and closes the day.

In Hindoo mythology Brahma was represented as having four heads and four hands. He was the supreme principle of the universe and of creative energy.

Of those showing defects the best known perhaps is the Cyclops, a giant with a solitary eye in the middle of his forehead. The word itself means a round eye. There were three Cyclopes, sons of Uranus and Gæa, who forged thunderbolts in Tartarus. Their names were Brontes, thunder; Steropes, lightning; and Arges, sheet lightning. The single eye has been thought to represent the sun. There were other Cyclopes, one of whom was Polyphemus, into whose eye Ulysses thrust a heated stick. These rather personified the heavy vapors of the hillsides.

In briefly reviewing the subject of malformations, I may make the following statements: There are dwarfs and giants by nature; so that in this respect mythology is not exceptional. There are children born without brain and some with neither brain nor spinal cord. The relatively great prominence of the eyes in these cases has given them the name of "frog children," and the resemblance has been made greater by the statement that they make a noise like a frog. They are among the commonest form of malformation, as also are the cyclops, which have either but one eye or else two eyes occurring close together. Any one



1. Cystoma



2. *Dupentia astensis* or *Dufrenoyia*



3. Symptom of Sphenocranium

who has ever seen a cyclops monster will appreciate the consternation its birth creates in a family and how the primitive and ignorant man would quite naturally think it either a god or a demon (plate X, 1). Probably every one has seen what is called hare-lip and cleft palate, two malformed features which often coincide; indeed there would be no difficulty in producing a monster on this basis. In some cases the lower jaw is absent or is very small; and when there is also a shortening of the upper jaw, there is a snout-like appearance which readily suggests the face of a pig. The absence of the front wall of the thorax or abdomen, exposing the heart and other organs which normally are concealed, might be one factor in suggesting the punishment of Prometheus. Defects in the limbs are common; one in particular, called the siren limb, in which the two lower or hind limbs are fused, with partial separation of the feet (plate X, 3), might readily suggest the divided tail of a dragon.

Quite often two animals are born joined together, to a greater or less extent, by the thorax, the head, the pelvis, or the mouth. Sometimes the one is much smaller than the other, and seems to be escaping from the side, or chest, or head, or mouth of the other. Sometimes one of the two is headless or heartless—quite often heartless. We see all these malformations in both the human subject and in lower animals. Sometimes the head is apparently single, but with two faces opposite each other, and we call these Janus heads; of these one face is usually much better developed than the other. Sometimes there are two heads and one body (plate X, 2); sometimes three heads and one body—a good basis for the three-headed Cerberus. Sometimes there are two individuals above the waist and one below; sometimes two individuals below the waist and one above. So we may have one head with four hands and four feet. Multiple fingers are common, as also are multiple toes. Multiple breasts are often seen; and this is another feature of some of the mythical personages.

So far as I am personally concerned, I have no hesitation in

reaching the conclusion that some of the monstrous forms of mythology, perhaps all of them, were not simply creations of the imagination, but were based on deformities or malformations which undoubtedly occurred in the days of myth as they occur at the present time; and further, that there was the same disposition then as now to attach supernatural importance to them. Again, it would have been quite natural then, as it now is among ignorant persons, to base stories on these malformed beings.

The foregoing paper was read at a meeting of the Anthropological Society of Washington, on March 9th, and was discussed as follows:

Discussion by Miss J. O. Hall

The very suggestive paper to which we have listened is so full of interest that it seems not only a discourtesy but a bit of wanton vandalism to throw a stone at it, however sure one may be that there are weak spots in its masonry. But sympathetic appreciation is not always the best stimulus in the search for truth.

The question arises, first, whether the author may not have become so thoroughly *en rapport* with his subject that he has himself unconsciously performed one of the old mythological exploits, or its modern equivalent. We are told that the giant Cacus dragged the oxen of Hercules backward by the tail, and the pursuer, following their tracks, came very near looking for them in the wrong direction. With all apology for the homely illustration, I would ask whether the process of myth-making set before us in this paper is not something of a reversal of the commonly accepted one and liable to lead us to take a back track in our search for knowledge. To see the monster, and deify or demonize him, and set him up in the classic pantheon and give him some realm to rule over, suggests a process of involution instead of evolution.

Does not this method better represent the production of fables than of myths? The former were "done on purpose" (to borrow a nursery phrase), to illustrate a truth that has already been apprehended; the latter were spontaneous processes of reasoning, to get at a truth not yet grasped. The myth is a growth; the fable is a creation. The former is based on the common racial experience of primitive man, and not like the latter on mere individual observations.

Moreover, has not the great body of mythology grown out of a struggle to explain, not the rare and the abnormal, but the natural and normal?

The great processes of nature were themselves marvels to the adult children of those early myth-making ages, and their simple, disingenuous thinking about them has given rise to the great cycle of nature-myths that has come down to us. By way of illustration:

Man had some experience and observation of lightning-stroke and of tempest, and could think of them only as controlled by some great being up in the air; and hence we have Jupiter with his thunderbolts, associated with the mountain-tops, the eagle, and all that is high.

The early masters of the bow and arrow saw the sun's rays dart from horizon to horizon, and to their thought they were silver arrows and the sun god became Apollo. The moon was weaker and feebler than the sun, and hence Diana was Apollo's twin sister. She was out late nights when wild beasts prowl, so Diana was a great huntress.

The night heavens, with their hundred starry eyes, became the watchman, Argus; and the sea, ever present and beating with its hundred hands at all shores, became Briareo or the Hecatonchires.

The north wind was a rough old fellow, who picked up off her feet a dainty little maiden who could not stand against it, and so Boreas snatched away Orythea.

This same simple process of reasoning was applied to a vast range of things in heaven and earth, and so the rustling leaves became whispering Dryads; the rippling brooks grew into laughing Naiades; and in the mountain echoes were heard the voices of impudent Oreads who would have the last word.

In the great mass of geographical myths there is a trace of tradition, starting from some individual experience, but no touch of deliberate fiction or fable-making:

A mountain-top pierced the clouds. This suggested mystery. The gods must live up there; so high Olympus was regarded with great awe. Remote Atlas held up the sky as the horizon does today. The sunshine was pleasant and the cold wind was hateful. Beyond the source of the north wind must be an ideal region: so the Land of the Hyperboreans became the first of a series of idealizations of place and government which includes Arcadia and Utopia and Atlantis and Gonzalo's Island and El Dorado. Some roaming adventurer possibly touched the region of polar night, and hence we hear of the land of the Cimmerians and its perpetual darkness. The oranges of Spain became the golden apples of the Hesperides. Perhaps some wanderer into Africa encountered some of its dwarfish tribes and brought back the story of the pigmies.

There is a great body of new myths: every nation perhaps has had its strong man,—its Hercules, or its Samson, or its Arjuna, or its Kwasind. Theseus, Perseus, Pirithous, Achilles, and Bellerophon probably had actual existence, and though many of the accretions that have become attached to their names have grown up according to the true processes of myth-making, yet in their origin they were not so much myth as hyperbolical history.

There are some crudely philosophical myths. Time destroys what Time produces, and hence Saturn devours his children. Wisdom comes from the brain, so Minerva springs full-armed from the head of Jupiter. In that dawning self-consciousness which led to crude introspection the power of thought was a marvel. It

bore one strongly from earth to heaven, and that with infinite swiftness. What else could it be but a winged horse, Pegasus? No wonder he was associated with exploits of danger as well as with poets.

Some myths spring from philological blunders, like that of the Myrmidons. Called after their organizer, the name resembled the word for the ant, and hence the assumption that they sprang from a swarm of these insects.

There are sociological myths. There is many a Circe in modern times who deals out refreshments to her guests so enticingly that they just make swine of themselves.

Optical illusions were sometimes the source of myth. When an enemy on horseback swooped down over a hill at twilight, the man and horse might easily, in a panic terror, be regarded as one duplex beast,—a Centaur. And whoever could see Neptune's floating hair in the whitecaps of ocean, could as readily see, in the roll of the waves, the curled fishy tails of his sea-horses.

I would ask, therefore, if most of the fundamental myths we know cannot be accounted for by simple evolutionary processes of thought like these? The deities once existing, it is easy to see how they were developed and enwound with a network of stories,—strange, grotesque, and inconsistent, but growing more natural in a later age. Man must interpret other beings and their actions by himself.

Browning's Caliban evolves his conception of his mother's god, Setebos, in somewhat the same way. It is a being like himself, but with a range of powers vastly extended. Modern theological thinking has not outgrown the same method. We find it difficult to think of supreme power and purpose apart from human power and purpose. Hence our frequently grotesque anthropomorphisms and anthropopsychisms.

Does not, then, the paper under consideration make quite too large claims for what would be at best only a minor element in the field of speculation into which it is projected? In the

simplicity of primitive life abnormal productions were rare, and those (with no medical museums or professional journals) would be little known.

Furthermore, is not the order of thought set before us that which belongs to a later period than the pure spontaneous myth-making age,—viz., the period of volitional creation, such as produces fable and fiction? In fact the kinship of his processes with those of fiction was distinctly recognized and acknowledged by the author at the beginning of his paper. Its claims for the necessity of material suggestion in its operation are the same as that Ruskin accords to the processes of story-making. He says all art, whether painting or poetry, represents something its creator sees or believes. He mentions the Centaurs who in Dante's *Inferno* guard the river of boiling blood and shoot at any submerged sinner who tries to escape. "That Centaur," he says, "dividing his long beard with the notch of his arrow before he could speak, actually trotted across Dante's brain in some shape."

I hope the discussion will determine, then, whether the real value of the paper in question is not twofold. First, in that it points out a new and fruitful foraging-ground for the creative imagination; and, second, in that it enumerates many interesting coincident resemblances between the conclusions of one process of thought and the starting-points of another.

Discussion by F. A. Lucas

In discussing Dr Lamb's paper Mr F. A. Lucas said that the principal sources of mythical monsters seemed to be tradition, misinterpretation of facts, and hearsay, aided by man's natural love for the marvelous. Thus the Roc of Arabian tales was very likely a tradition of the extinct *Æpyornis* of Madagascar, aided by the actual existence among the natives of some of the huge eggs of the bird. The earth-bearing tortoise of Hindu mythology

might be due to legends of the giant extinct tortoise, *Colos-sochelys* of northern India, the last of which might have been coeval with primitive man. As instances of misinterpretation of facts, the numerous reports of giants, based on bones of the mastodon and mammoth, were cited, as well as the evidence of man and the flood, founded on a fossil salamander. It was suggested that the harpies of mythology might have had their origin in tales of the large vultures of southern Europe, and that mermen and mermaids were evolved from seals which strongly resemble men when briefly seen swimming with their heads above the water. Numerous instances which had fallen under the speaker's observation were cited, of gross misinterpretation of malformations; a chicken was stated to have been the offspring of an eagle and a fowl, and a dog was said to have been that of a bear and a dog. A fragment of skull of a fossil bison showing the foramina for exit of optic nerves, had been pronounced a reptile with a double spinal canal, and the imperfect cranium of a cyclopean calf had been ascribed to a "moundbuilder." To hearsay, aided by love of the marvelous, was attributed the unicorn based on the rhinoceros and oryx antelope; and similar cases were cited.

A REMARKABLE COUNTERFEITER

By ALBERT ERNEST JENKS

Prehistoric stone implements have been and still are more or less successfully counterfeited. Perhaps the most original, clever, and interesting maker of spurious stone implements in America is Mr Lewis Erickson. Midway between Deerfield and Marshall, and in Medina township of Dane county, Wisconsin, is the large, well-kept, prosperous Erickson farm. The family consists of a mother, three daughters, and three sons, the eldest of whom is Lewis who was born in the spring of 1873. He is a slight, fair-haired person, about five feet ten inches in height, and unassuming in manner — in fact, a person likely to be passed unobserved, or, if noticed, to be trusted and not suspected. The children are all American born, but the parents are natives of Norway. The reputation of the family in the community is first-class. The family is industrious and peaceful, is not niggardly in its way of living, and its word is as good as its bond. It is considered shrewd at a bargain, but perfectly honest. The boys have all remained at home; since the death of their father they have freed the farm from a heavy mortgage, and have recently erected a large new house. They have the reputation of being the cleverest farm boys in the community; they are expert trappers and hunters, and are adept in making the hundred and one things which are found useful about a farm. They have availed themselves of none but the commonest school privileges, and seldom go far from home. They are keen, intelligent observers, however, and in regard to the life with which they come in contact they may be regarded as educated boys.

Many collections of prehistoric implements in Wisconsin to



FISHING-HOOKS CHIPPED BY LEWIS-ERIKSSON

which additions have been made since the early nineties contain Erickson "implements." From these collections and from transient buyers his specimens have gone into other states until it is impossible to measure the mischief done.¹ One reason why this investigation and study were begun is because such numbers of experienced collectors and archeologists pay extravagant prices for these specimens and, what reveals their thoughts best, refuse to disclose to one another the source of their alleged treasures.

After having spent several days in studying a large collection of implements made by Erickson, but which were previously considered genuine, the illustrations of some of which are here given, the writer, accompanied by Mr Arthur C. Mills of Madison, Wisconsin, and Mr Fred Du Frenne of Middleton, Wisconsin, visited Mr Erickson. Under the most auspicious circumstances the story of the inception and development of his remarkable counterfeiting was obtained from him.

During an illness when nineteen or twenty years of age, Mr Erickson was handling some flint arrowheads. One of these, the apex of which was broken, he pressed with his teeth, with the result that a small chip flew from the implement. This was noted by the youth, who bit upon the stone again and again, chipping away its edges until he had succeeded in forming a fairly sharp apex. His ingenuity led him from the use of his jaws to the employment of steel pincers. He obtained a common pair with flat jaws, and soon became expert in reforming a broken tang or apex. Later he filed the pincers to the form presented in the accompanying illustration (figure 30), and with this tool he made the beautiful and often delicate implements which clearly outclass the product of similar workers in stone.

It is believed that Mr Erickson's art is entirely his own, both in its discovery and perfection, and it is chiefly in this fact that its

¹Since completing this memoir Dr Otis T. Mason of the United States National Museum writes me that he has just been shown two or three specimens from New York which were purchased from the Erickson workshop.

interest lies. He did not visit the World's Fair, where certain archeological exhibitions otherwise might have been suggestive to him, and he also claims never to have read or even heard of any



FIG. 99.—Pincers used by Erickson in implement chipping.

of the scientific writings on the chipping of flint; and indeed when one knows his method credence must be given his statement. Mr Erickson has never quarried the original rock¹; in fact he claims not to know how to chip the faces of the implements. His part of the work has been simply to modify the edges of rejects, cache specimens, and broken implements, the faces of which were already chipped. Such a specimen was held in his left hand, the thumb opposing all four fingers in grasping it tightly.

In his right hand he held the pincers, the short convex-face jaw of

which was held firmly on the underside of the edge of the implement to be modified. The other jaw of the pincers, being filed into a vertical blade about one-thirtysecond of an inch thick, was placed against the stone implement on the upper surface of its edge; then this jaw-blade was forced firmly and steadily downward. Such movement, although best characterized as *crushing*, modified the edge by breaking a chip from the lower side as though the pressure were made with a bone or horn chipping tool. However, Mr Erickson works with great rapidity, and it is believed with

¹ Dr Samuel Weidman, geologist of the Wisconsin Geological and Natural History Survey, has examined each implement herein illustrated and states that the material from which all were made might have been obtained originally within ten or twelve miles of the farm on which it was modified.



FISHING SPEARS AND ARROWPOINTS CHIPPED BY LEWIS ERICKSON

greater accuracy than most other workers, as the stone implement is held securely against the under jaw of the pincers, thus making accidental fracture very uncommon with him. The pincers are always used with the vertical blade uppermost, the stone implement in the left hand being shifted and turned over. When the modified edge is too thin and sharp, as is often the case with serrations, a simple rotary movement of the fore-arm deftly glides the vertical blade around each serration, and the thin edge flies off in tiny chips. This is his entire art, except that the newly chipped edges are smeared with a dirty thumb, and frequently the implements when sold are seen to have earth adhering to them. He wears glasses to protect his eyes from the flying sharp-edged chips. He could easily have made in much less than half an hour any implement here illustrated.

It is about three years since the spurious nature of Mr Erickson's "finds" was first discovered. Mr Emil Schanck, a neighbor who had many bizarre implements in his collection, took another collector to the Erickson farm to buy some of the specimens which were making Medina township famous. Lewis was not at home, but the visitors had access to a workroom in which they found implements in process of manufacture. The discovery was of such a nature, however, that some collectors within a distance of twenty miles continued until the present time unconscious of the fraud.

Dane county is plentifully supplied with prehistoric stone implements, and others besides Mr Erickson counterfeited them, but most of this work has been very crude and readily detected. Mr Severt Huseboe, a near neighbor of Mr Erickson, has done some really good work, and these two young men have sold together and kept each other's secrets. It is not known how many have been sold, but a thousand is considered a conservative estimate. Some pieces were disposed of for six dollars, others for four dollars, while at two dollars and three dollars the demand was greater than the supply.

Mr Erickson has given more attention to the making of knives and fishing hooks, spears and arrows, than to other forms of prehistoric implements, but he has also made many blades and cleavers for inserting in warclubs. He has also made many bizarre pieces which the unsuspecting must class as "ceremonials."

The accompanying illustrations¹ of implements from Erickson's workshop show clearly the kind of work done, and they also exhibit the evolution of the cutting blade in his hands from the simple leaf-shape cutting blade and the sharpened sliver of stone to the *ulu* or woman's knife — an evolution which, in the light of Mr Erickson's ignorance of primitive people, is suggestive to say the least.

An examination of the plates will reveal the nature of this remarkable counterfeiting. Upon most implements which are so narrow that Erickson's chipping from the edges has rechipped the entire surface of the spurious implement, it is believed to be impossible to detect the fraud. Upon broader implements, especially those which have been quite smooth in their original form the sharper edged rechipping may at times be noticed — the illustrations seem to suggest this more than the implements themselves. A magnifying glass will also assist in the detection, as the rechipped area of some pieces, though not of all, is less glossy than the old surface. Two or three per cent. of the implements also bear slight trace of the steel pincers. This is noticed as a short hair-line of black or a highly polished line without color. Of course in trying to detect Erickson specimens all bizarre patterns should be viewed with suspicion.

¹ From photographs made by Mr F. W. Durkoff of Middleton, Wisconsin.



CUTTING IMPLEMENTS CHIPPED BY LEWIS ERICKSON



CUTTING IMPLEMENTS CHIPPED BY LEWIS ERICKSON

PRELIMINARY NOTES ON EXPLORATIONS AMONG THE AMOOR TRIBES¹

By BERTHOLD LAUFER

The tribes which I explored during the years 1898 and 1899 for the Jesup North Pacific Expedition are the Ainu, who occupy the southwestern part of the island of Saghalin; the Gilyak, who inhabit the northern part of that island, the lowlands of the Amoor, and the coast of the Liman; the Olcha and Tongus, who live on the coast of Okhotsk sea, in the valley of the Poronai, and around Patience bay on Saghalin; the Tungusian tribes of Amgun river; and the Gold of that part of the Amoor lying between Chabarovsk and Sophisk. Of these tribes, the Ainu and Gilyak may be considered as absolutely isolated, so far as language is concerned, both from each other and from the other Amoor tribes. The language of the Gold is closely related to that of the various Tungusian tribes, although there are remarkable differences. It forms a branch of the large stock of so-called Tungusian languages, which appear to be intimately connected with the Mongol and Turkish tongues. None of the tribes mentioned can be thoroughly understood by its own culture alone, for the single tribes have influenced each other to such an extent that, generally speaking, all of them show at present nearly the same state of material culture. The principal differences between them lie mainly in their physical types and intellectual life.

The chaotic accumulation of ideas, due to foreign intercourse since the dawn of history, makes it impossible at this moment to

¹ The material contained in this paper was collected under the auspices of the Jesup North Pacific Expedition, and is now published by permission of the Trustees of the American Museum of Natural History. The specimen numbers refer to the Museum catalogue.

я, occurring in native names, is pronounced like *e* in *her*; *ä* is the nasalized *a*.

answer satisfactorily the question, Where, when, and how has the culture of these peoples arisen and grown? From an historical point of view, three periods of cultural exchange may be recognized: first, a period of influence exerted by the various other Siberian peoples as a whole, probably beginning in prehistoric times, but chiefly by the Yakut (a northern Turkish tribe, from whom they no doubt learned the iron industry); second, a period of close affiliation with Chinese and Japanese culture, which is so evident that every observer must be aware of it; and, third, a period of commercial intercourse, during the last few decades, with the Russians, who have had such an effect on the social life of the Amoor people that the latter confess to have reached a stage of development gradually approaching that of the Russians. The Gilyak in the environs of Nikolayevsk now build Russian houses and make stoves, wear Russian clothing, use Russian utensils, work together with Russians in their fisheries, and bow to the images of Russian saints.

Toward the end of last summer I started in a boat from Nikolayevsk to visit the villages at the mouth of the Amoor and on the Liman. I had to cover a distance of about 200 versts (132 miles) before arriving at Chome, the farthest and southernmost settlement of that region. Here I had the first glimpse of genuine old Gilyak life. The universal belief in the power of the shaman, who formerly exercised so much influence over the Gold, is fast dying out, being now limited to but few villages. The sick Gold does not apply to him, but summons a Russian physician. The Gold particularly are rapidly adopting the culture of their rulers, so that their individuality is unfortunately disappearing. They are fond of Russian customs and fashions, and adopt all new styles with ease and pleasure.

All the Amoor tribes subsist by fishing and hunting. Salmon (*Salmo lagocephalus* Pall.), which ascend the river to spawn at the end of August, is their staple food. They are no longer exclusively nomadic tribes; even the Tungusians, who possess herds

of tame reindeer, locate in the summer to catch fish, while the reindeer pasture alone on the tundra, sometimes at a great distance from their villages.

The Ainu, Gilyak, and Gold own dogs in great numbers for drawing their sledges; the Gold also frequently use them to pull their boats, where the bank is level and unwooded and the water near the bank is sufficiently deep. Reindeer are employed for riding, carrying loads, and drawing sledges. Some of the Gold have even turned their attention to agriculture: they grow potatoes, leeks, cucumbers, and sometimes millet and tobacco. The natives do not understand the potter's art, and only the Ainu are familiar with the art of weaving.

It is not yet possible to state definitely all the results of the trip: the material collected must first be carefully examined and studied. A close investigation of the history of eastern Asia and Siberia is necessary to shed light on the problems arising as to the origin and growth of culture in the Amoor country: even Chinese and Japanese literature should be ransacked to obtain satisfactory results. I will therefore confine myself to a brief description of the art of the Amoor tribes, the social life of the Gold, the tribes of the Amgun, and to some general statements regarding traditions.

To understand the influence of Chinese culture, which has lasted for many centuries and is still active, it will be well to cast a glance at the decorative art of the natives. On the whole, it is very uniform in character, and there is no great difference between the patterns of the Gilyak and those of the Gold. The Gold are more versed and more skilful in all kinds of art, but the Gilyak are superior to them in wood-carving. The Tungusian tribes of the Amgun and Ussuri excel in cutting the ornaments used to decorate birch-bark baskets. As a rule, the nearer the people live to a center of civilization, the higher the development of their art; the farther they recede from it, the less their sense of the beautiful. The Gilyak of Saghalin possess but few ornaments, and are unable to explain the complicated designs as they

occur on the mainland. Owing to Chinese influence, the Gold have attained remarkable skill in the art of silk-embroidery, the knowledge of which I found limited to those living in the neighborhood of Chabarovsk. That most of the patterns are derived from the Chinese, is made clear by the fact that the geometric ornaments, such as the square and the spiral meander (key ornament), are exactly the same as in Chinese and Japanese art, and that the animals which appear in the designs of the Amoor natives are just like those which play an important part in Chinese art and mythology.

It is indeed most remarkable that animals, such as the bear, the sable, the otter, the sturgeon, the salmon, which predominate in the household economy and are favorite subjects in the traditions of the Gold, do not appear in their art,¹ whereas their ornaments are filled with Chinese mythologic monsters which they but imperfectly understand. The same is the case with the Gilyak; for example, we find eight representations of the phenix on an old Gilyak quiver, also the picture of the Chinese tortoise, an animal they themselves do not know. The other subjects on this carved piece are a spider, a lizard, the sun, a tiger, two snakes, and a frog.

As the representations of all animals are borrowed from the Chinese, they cannot be connected, of course, with any concrete ideas: they have merely an emblematic meaning; they symbolize abstract conceptions. The art of the Amoor peoples is lacking, therefore, in all realistic representations. They do not reproduce the objects of nature, but copy foreign samples. Owing to this fact, all their productions of art are lifeless. Nevertheless, it cannot be denied that the people, at least some individuals, have cultivated and developed a certain sense for beautiful lines and tasteful forms.

¹ The carvings and drawings representing animals, which serve as charms or amulets, are not included in this statement, since they do not belong to the sphere of decorative art.

Both swastika and triskeles are met with in East Siberian art. The swastika occurs in connection with the bear and the eagle. The Gilyak have a kind of wooden spoon which is used only at the ceremonials of the bear festival. The end of the handle is surmounted by two carved bears, and on the bowl is to be seen the swastika with a cross in the middle. The arms terminate in wave-lines, and are of the same shape as some discovered by Schliemann on the whorls of Troy. On the bottom of a cylindrical box was found a variation of the swastika, in that the design had two additional arms on the sides. The design of the swastika on the breast of an eagle may be traced to Chinese mythology, and the Chinese derived it from India through the medium of Buddhism. The gods of the old Aryan Indians were killers of snakes and serpent demons, especially the Garuda, a fabulous eagle-like bird and messenger of Indra, of whom the swastika was a constant attribute.

In a paper entitled "Prehistoric Symbols and Ornaments" (published in the *Bastian-Festschrift*), Karl von den Steinen suggests that the triskeles found on old coins of Persia, Asia Minor, and middle Europe, has been evolved from the outlines of a cock. An interesting counterpart of this phenomenon is met with in the material which I collected; and his theory not only receives striking and remarkable corroboration, but becomes from a mere hypothesis an evident fact. The animal which plays a predominant part in the ornamental art of all the Amoor peoples, and is more frequently reproduced than all other animals together, is the cock. This circumstance is the more conspicuous, since the cock is not a native of the Amoor country, but was introduced from China, and recently, of course, by the Russians. Nowadays there are some Gold who raise poultry in their houses. The Gilyak on the northeastern coast of Saghalin never saw a cock, excepting a few who had chanced to see a Russian village, but they know and explain it by their ornaments. They call it *pākx*, a word apparently derived from the Goldian and Olcha

word *pökko*, that may be traced back to *fakira gaska* of the Manchu language. Another Goldian term, *chokó*, appears likewise in Manchu, and is perhaps allied to the Mongol *takiya*.

Since the cock is a newcomer in that region, it is not surprising that he plays no part in the mythology of the natives; but he does with the Chinese. In their opinion, the cock is a symbol of the sun, because he announces the rising of the sun. Besides the earthly cocks, there is a heavenly cock, which, perched on a tree, sings at sunrise. This tree is the willow, which also symbolizes the sun. The cock is sometimes called in Chinese *chü-yä*, that is, "he who enlightens the night;" and the sun, *tsin-tsi*, "the golden cock." Besides, it belongs to the class of animals that protect man from the evil influences of demons. Live white cocks are sometimes used in funeral rites.¹

Regarding the representation of the cock in Chinese art, only a few general facts may be stated, as this branch of research is little explored, and investigations of the ornaments have unfortunately been almost neglected. Japanese art is based wholly on Chinese, and the ground on which it stands is somewhat better known. The ordinary domestic fowls are frequently depicted by Japanese artists, the cock being the greatest favorite among them.² It is painted on hanging scrolls, and modeled in wood, bronze, porcelain, and other materials. Most frequent and admired is the painted design of a cock standing on a drum (*taikō*); and in this case the sides (or one side) of the drum are decorated with a triskeles (*tomoye* or *mitsutomoye*).³ This is the well-known circular

¹ See De Groot, *The Religious System of China*, I, pp. 199, 200; Georgiëvski, *Mythological Conceptions and Myths of the Chinese* (in Russian), p. 53.

² It is stated that cocks are often kept in temple grounds, and are carefully attended to by priests and others, because they foretell changes of the weather, and by the regularity of their crowing mark the passage of time (see Bowen, *Japanese Emblems*, p. 82).

³ Compare the pictures in Hulsh, *Japan and its Art*, second edition, p. 138; Gonna, *L'Art Japonais*, I, pp. 210, 234; II, p. 237; Anderson, *The Pictorial Arts of Japan*, plates 15, 64; Audley, *The Ornaments of Japan*, sec. II, pl. 1, sec. IV, pl. 7, sec. VI, pl. 2, sec. VII, pl. 8.

diagram divided into three segments. That the cock and its last offshoot, the triskeles, occur in Chinese-Japanese art, is beyond doubt; and it is therefore certain that the Amoor peoples have adopted both the animal itself and its artistic reproduction from the Chinese. In the decorative art of those tribes we find the design of the cock in all stages, from a perfect picture of the bird, true to nature, through a long series of intermediate forms, down to the merely conventionalized lines of the ornament which we call the "triskeles." From this observation we may infer that the Chinese-Japanese art must also have reached the ornamental forms through the same scale of development, consequently these missing links shown by Siberian art are necessarily still to be found in the large province of Sino-Japanese art. It is impossible that the Amoor tribes should have evolved independently the missing links which lead from the cock to the triskeles, since they acquired both these forms from their southern neighbors. If we cannot prove that the intermediate forms are found with the latter, it is due wholly to our lack of knowledge of their art.

On some representations the cock holds in its beak a circular object which the natives explained to me as a grain of wheat that the bird is about to swallow; but this explanation seems to have arisen after the true and original meaning had been forgotten. It is rather more probable that the circle which is generally between two cocks facing each other, or in front of a single one, represents the sun, which, according to Chinese mythology, belongs to the cock. In fact, the sun is represented on mythological pictures of the Gold as a simple circle, or as two concentric circles, with two diameters at right angles to each other. Not only the triskeles, but also continuous and sometimes complicated arabesques, have evolved from the shape of the cock. Thus arises a group of decorations which are to be designated as "cock ornaments." The combinations of a cock and a fish, and also the way in which other animals are treated in the same style as the cock, are very curious.

From the great mass of material at my disposal a few specimens have been selected to illustrate the preceding remarks.

Figure 31 shows the middle part and the left side of a fish-skin coat. The back parts of the Goldian and Gilyak fish-skin garments are richly decorated. The ornaments are cut out of pieces of fish-skin, and generally colored blue; they are then sewed with fish-skin thread to a piece of fish-skin of a shape adapted to the size and form of the ornament. A great number of such single patterns are then symmetrically put together on the garment itself.

Nearly all forms which the cock ornaments have assumed are represented on this specimen. We observe the cock with wings outstretched (*a*), probably perched on the willow, and crowing, for its beak is open. The back part of its body is shaped like a fish, and the circle representing the sun appears as the terminal part of a curved line. The cock placed laterally (*b*) is similarly formed. It is likewise crowing; but the tail-feathers and wing-feathers are represented by only three lines, whereas the former (*a*) shows four curves for the tail and six for the wing. Inside of its body (*b*) is the picture of the sun and a spiral continuing and rounding off the line of the wing-feathers. The cock on the border to the left side (*c*) has undergone some further alterations, because the artist was obliged to adapt its shape to the circular lines which enclose it. The pattern *d* deals in a remarkable way with the subject of the two combatant cocks. The head has become a simple spiral with a circle attached to it; its body has shrunk into a convolute spiral with a lateral process, i. e., the triskeles; but the four tail-feathers are marked very distinctly, and would be out of proportion for the real animal. The space between the two tail-feathers is filled with two triskeles and two variations of it consisting of only two curves. In the interior of the figure suggestive of a willow-tree, we see two fishes (*e*), whose tails are figured in the same style as the body of the conventionalized cock, i. e., as a triskeles; whereas the fishes standing upright (*f*),

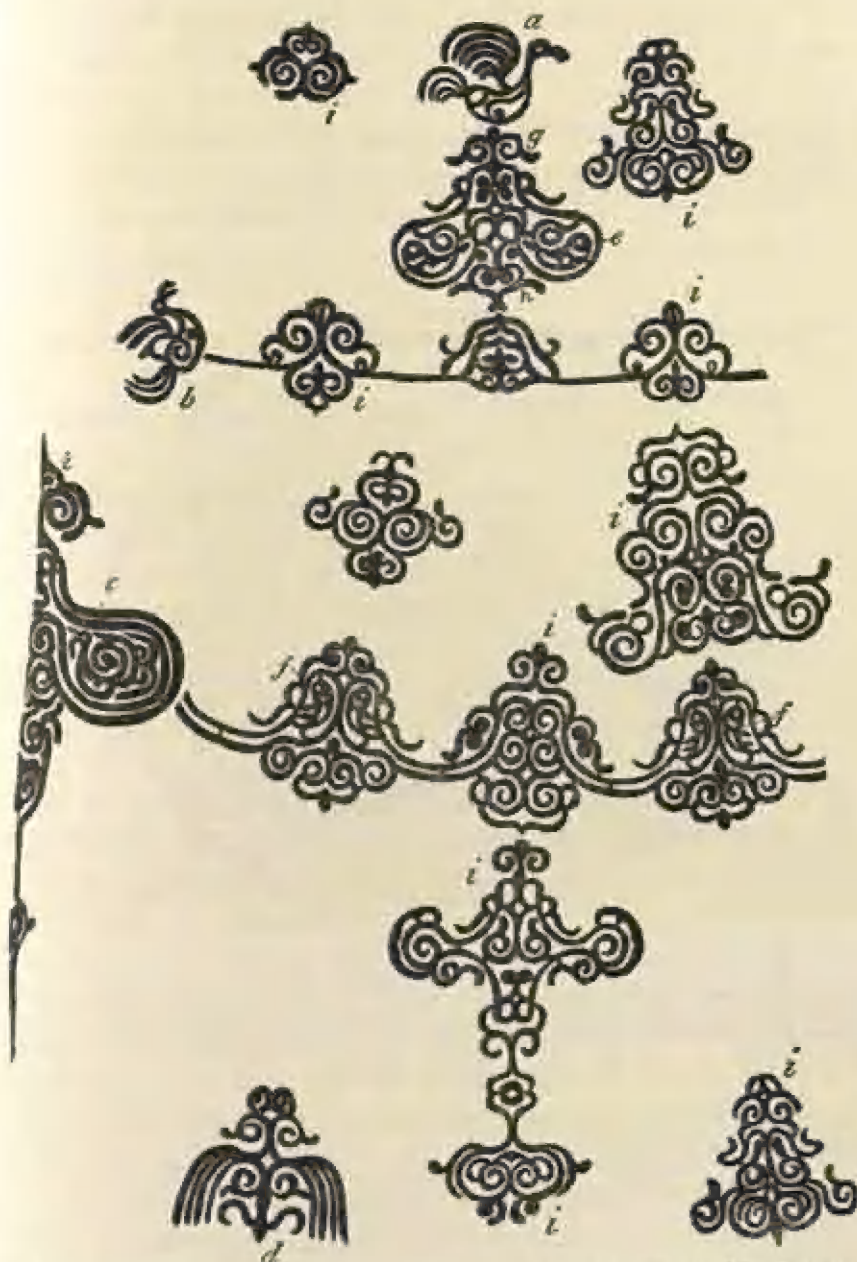


FIG. 30.—Applied designs from the back of a fish-skin garment of the Gold; left half. (Cat. No. 445.)
 1 nat. size.

being adapted to another pattern, have no spirals on their bodies, but are marked with two fins on their sides. The spirals are placed farther down. If we now dissect and analyze all other apparently geometrical ornaments into their single parts, we find that all such forms may be traced back to the figure of the cock. The circular suns always suggest its presence; for example, in the spiral triskeles *g*, and especially in the pure triskeles *h*, which



FIG. 32.—Birch-bark hat of the Goldi. (Cat. No. 425.) $\frac{1}{2}$ nat. size.

show clearly the two combatant cocks and the two suns between them. Thus at last two merely ornamental forms are evolved from the picture of the cock,—the simple three-footed trigram and the convolute spiral. All figures marked *i*, which appear rather complicated, are built up of these two elements only, to which the orb of the sun is added.

The ornaments represented in figure 32 are cut out of birch-bark and sewed to a birch-bark hat. They are put on in three rows around the hat, and each row contains four double cocks

executed in an ornamental style. In the lower row on the border the tail-feathers are easily discerned. The body is indicated by a spiral, to which the disk of the sun is joined. The two heads are placed together so as to form a rhomboidal figure. These eight cocks are dyed blue. On the edge between the tail-feathers are four single pieces dyed black. These are ornamental survivals of the cock's wing-feathers. The cocks in the middle row have their heads distinctly marked, and two suns on each side of the neck. Their bodies have the shape of the triskeles. These are colored red, but the heads are not dyed at all. The suns are blackened. The cocks of this row are ornamentally connected with those of the lower circle at their heads, and with those of the upper row at their tails. This central row shows the most conventionalized forms of the cock. If we imagine a line drawn through the two points where the tail-feathers of the lower and middle rows come in contact, we are able to distinguish the two united cocks of the third row. Here the two heads have coalesced into an ellipsoid which has a sun on either side, and the bodies are dealt with as ornaments adapted to the top of the conical hat.

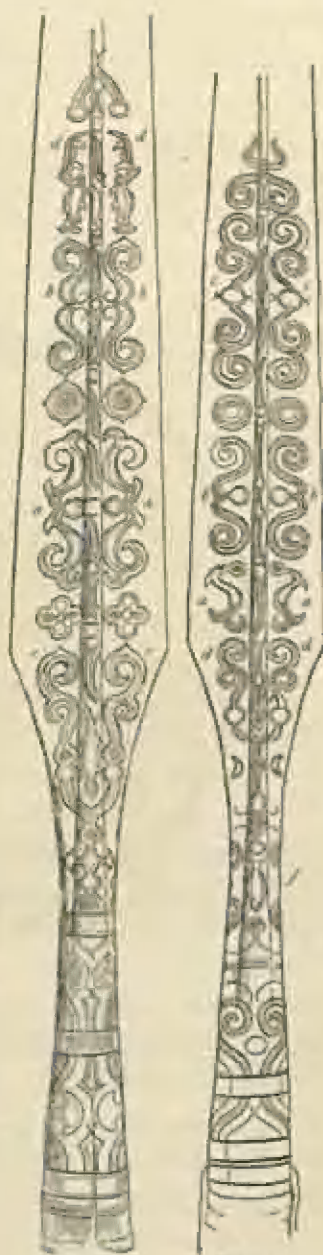


FIG. 33.

FIG. 34.

Remains of the Gilyak. (Cat. Nos. 100, 101.) $\frac{1}{2}$ nat. size.

Heads and suns are colored blue, and the other parts are blackened.

The ornaments with which the Gilyak bear-spears are adorned are all derived from the figure of the cock. In figure 33, *a*, the four symmetrical cocks are easily discernible as birds, particularly by their crests; but their outlines are limited to just what is necessary to distinguish their shape, feet and wings being omitted, and only the tail-feathers plainly marked. Between the beaks of each pair is the orb of the sun. The design *b* has a merely geometrical form: head and sun remain, and the tail consists of one spiral only. The juxtaposition of both ornaments shows plainly how the latter (*b*) has arisen from the former (*a*). In *c* the cocks appear as triskeles. The animal (*d*) at the upper end of the blade is a fox devouring a carp, and that on the raised medial line at the lower end (*e*) is said to be a lizard.

On the other blade (figure 34) we observe two single cocks, each with a sun (*a*), of a shape similar to that of the combined cocks on figure 33, *a*. The cocks represented in *b* have no crests, but each a tail-feather in the form of a well-executed single helical line; whereas the cocks in *c* have a tail formed of two spirals, and the bodies without a head are represented as single lines. This variation has thus become a mere triskeles in the same way as *d*. A lizard (*e*) and a flat-fish (*f*) are designed on the raised medial line of the blade.

These spears are made of iron. The greater part of the design is inlaid with silver. The parts shown in hachure on figures 33 and 34 are inlaid copper and brass.

Figure 35 represents an ornament on a pair of boots of the Orochon on the Ussuri. The boots are made of elk-skin. The upper ornaments are painted on fish-skin and sewed on with red, blue, and yellow thread; the ornaments below are cut out of fish-skin dyed black, and are attached with red, yellow, green, and blue thread. The cocks in this design are executed almost true to nature, and, what is most remarkable, even have spurs, which they have not

on other patterns. On the paintings the same picture is reproduced, though somewhat confused and stiff.

Figure 36 shows a lacquered oval tobacco-box of the Gold, the ornaments on which are designed with China ink and colors. The main part of the cover (*a*) is taken up with eight large, finely drawn cocks, whose heads are adorned with triskeles. Their



FIG. 35.—Ornament on an elk-skin hoof of the Orochon (Ussuri). (Cat. No. 35.) $\frac{1}{4}$ nat. size.

bodies are treated like those of the dragon (see figure 38) with the scales indicated on it, so that we may speak of cock-dragons as well as of dragon-cocks. The four fishes in the middle part are adapted to the cock style. The spaces between these cocks are occupied by more conventionalized fish-cocks, and at the end of this field there are cock-shaped musk-deer (compare figure 39). The cock ornaments on the rim of the cover (*c*) are executed in a far more conventional way; and on the red border around the top

of the cover (*a*) they have developed into purely geometric forms, and are simple cirrous arabesques. On the other side of the rim (*b*) we observe two small and five large equal triangles. The two outer and the central triangles clearly show types of cocks; two of the intervening triangles show conventional forms of



FIG. 36.—Ornaments on a tobacco-box cover of the Gold; (left half. *a*, Top surface of cover; *b*, Front, *c*, back, of rim of cover. (Cat. No. 27A.) 1 nat. size.

musk-deer, whose bodies are treated like that of the cock, and the remaining two represent two fishes in combination with a cock's body. In this way we are able also to follow out on this box the whole metamorphosis of the cock from its natural form to a mere geometric figure.

In figure 37 is reproduced the ornamentation of a birch-bark box representing combinations of the cock and the fish. In the

middle part (a) we see two cocks designed true to nature, two fishes over their heads, and two to the right and left. The tails and feet of these cocks are at the same time the continuation of geometric lines: they have therefore a double function. On both sides we observe very interesting shapes of cocks, which show their bodies purely ornamental, but the heads in combination with the sun in natural form. This ornament is an excellent



FIG. 77—Ornaments on a birch-bark box of the Gold. a, Long side of box; A, Short side. (Cat. No. 446). $\frac{1}{2}$ nat. size.

example of the development of the cock design into a spiral figure.

Figure 38 shows a dragon ornament. The Chinese dragon (*lung*; Gold, *mudur*) holds a prominent place in the mythology of the Gold, and is a favorite subject in their ornamentation. It has antlers like an elk, a scaly, serpent-like body, and produces rain and thunder.¹ Designs of the dragon are made particularly in large symmetric figures. Such figures are generally divided into four squares, and each square contains the same subject in

¹ It is the symbol of the dignity of a sovereign, because both are sons of Heaven.

symmetric arrangement. The dragon (*a*) is repeated four times, with its mouth open and its tongue quivering. Its horns are conventionalized in a form reminding one of the feathers of the cock. The four fields at the ends of the dragon-tails are filled with birds (*b*), each holding a fish in its beak. This representation is explained by some people as a wild duck, but by others as a cock. The latter explanation seems the more probable, as the form of

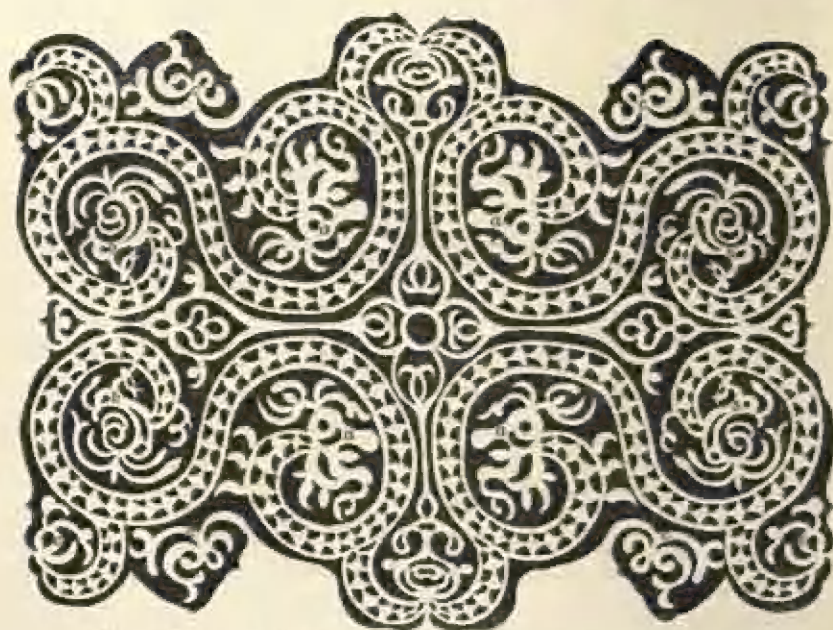


FIG. 38—Ornament of the Gold, cut out of paper. (Cat. No. 423 A.) 1 nat. size.

this bird agrees exactly with that of the cock. Of course this design is far from being realistic. The idea that the cock devours the fish is not suggested; the meaning is purely emblematical. The other ornaments, marked *c*, are easily recognized as more highly developed cock ornaments.

Figure 39 represents a paper pattern for embroidering a pair of ear-laps. The two figures (*a*) on both sides are conventionalized musk-deer (*Moschus moschiferus* L.), whose bodies are shaped like the body of a cock. Their feet are indicated by two circles.

The ornaments *c* and *d* signify two cocks facing each other, and *b* is a tail-feather. The dentils on the edge (*e*) are derived from the wing-feathers.

A design for embroidering a shirt is shown in the paper pattern represented in figure 40. In the center is a circle, around which are grouped four tortoises (*a*). Around it, on both sides, four circles and two ellipses are symmetrically arranged. In every circle there is a roe (*Cervus capriolus* L.), *b*; two snakes (*muikt*),



FIG. 39—Ornament of the Gold, cut out of paper. (Cat. No. 235 L.) $\frac{1}{2}$ nat. size.

d; and a bird (*c*), called *teverko*, the species of which I have not yet been able to determine. Each ellipse contains a frog (*Rana temporaria* L.), *e*; two spiders (*atkomana*), *f*; and two gadflies (*shigaxtd*), *g*. Outside of these figures are four mosquitoes, *h*; four chimney-swallows (*Hirundo rustica* L.), *i*; four snakes, *d*; four Siberian deer (*Cervus elaphus* L.), *j*; and four fawns (*Cervus capreolus* L.), *k*.

Of other animals, aside from the cock, which occur in the ornamentation of the Gold, the following deserve mention:

elk, roe, fox, dog, eagle, wild duck, wild goose, swan, swallow, carp, crucian (*Carassius vulgaris*), lizard, frog, snake, and insects. The Gold also cut ornaments out of birch-bark which are explained as representing human figures. They use stencils made of birch-bark for painting patterns on their boats.

The ornaments of the Ainu cannot be compared with those of the other tribes. This tribe still holds a rather exceptional posi-



FIG. 40.—Ornament of the Gold, cut out of paper. (Cat. No. 275 B.) $\frac{1}{4}$ nat. size.

tion, which is due, on the one hand, to their isolation in the southern part of Saghalin, and, on the other hand, to their indolent, passive character. Notwithstanding their resemblance to the neighboring Gilyak, many inventions and ideas are met with which are their own, and are not found in any other tribe. Such, for instance, are the *ikuni*,¹—small wooden sticks used in ceremonial drinking-bouts to lift the mustache and beard in order to prevent them from getting wet. These sticks are decorated with carvings in relief, the like of which I have as yet failed to discover

¹ Compounded from *iku*, "to drink," and *ni* "a piece of wood."

either in Chinese or Japanese art. The fact that the Ainu have special names for their various decorative lines and figures makes me still more inclined to consider certain branches of their art as almost wholly their own. Of the mustache-lifters in our collections, there is one which shows three nicely carved seals (one of them is unfortunately broken off): that in the middle is floating on the surface of the sea, which is represented by cross-hatched lines; the other two are resting on shore, the beach being shown by parallel lines. Another shows in relief two sledges driving over the ice, one behind the other. On a third *ikuni* are represented a sturgeon (*atuikamui*) and a netting-needle. A fourth has the representation of a landscape. All hatched parts signify mountains; the hatchings, grass and wood; and the serpentine lines, valleys and roads. The fifth represents a pair of spectacles, a conventionalized face, an eye, and two noses.

The Gilyak have no universal name by which they designate their people as a whole; they have only names for the three tribes into which they are grouped; i. e., the Nighubuñ, the Nibux, and the La'buñ. The word *buñ* or *bux* means "man"; and *La'buñ*, "people of the Amoor," *La* being the Gilyak equivalent for the Amoor, which all other tribes call Mañgu. Saghalin is called *Laër-mif* or *La-mif*, i. e., country near Amoor river. The Nighubuñ, who are also thus styled by the other peoples and by the Japanese, inhabit the northeastern coast and the interior of Saghalin. They are divided into the Tro-Gilyak and the Tym-Gilyak. The Tro people occupy the mouths of Tym and Nabył rivers and the shore of Okhotsk sea. Their main villages are Milk-vo, Nabył-vo, Lun-vo, Tyrmyts, Nyi, Chai-vo, and Kük-vo. They are the best seal-hunters among the Gilyak, and keep nearly aloof from Russian intercourse. I visited them in the summer of 1898.

The Tym people have their settlements in the valley of the Tym, but a few have migrated farther southward into the valley

of the Poronai, at the mouth of which they have founded the village of Siska.¹ Their most important villages are Mos-bo, Usk-vo, Slai-vo, Adatym.

The Nighubun are divided into eighteen clans (*xal*), of which the following are numerically the largest: Chuighui in Chai-vo, counting about 118 members; Adatym, about 160 members; Mymyji in Nyi, 94 members; Urlanj in Chai-vo, about 55 members.

This tribe has a tradition which relates that they came to Saghalin from beyond the sea. The country where their forefathers lived is called *Kopchakki*. The first living man and his wife had 47 sons and 47 daughters. The 47 sons married their sisters. The legend runs that they once received some white paper from the god Taighan, and so were able to write. One day when they returned home from hunting, they could not understand one another, and talked in forty-seven different languages. Seven of the brothers remained in the country; the other forty built canoes and sailed out beyond the sea, carrying along the papers containing their records. On the way they were separated. Twenty of them encountered a heavy rainstorm, in which their papers got wet. After a long trip they reached shore. They prepared a meal and spread the papers out on the beach to dry; but suddenly it began to thunder and lighten, and their annals were destroyed. The Gilyak and Tungusian tribes are the descendants of those brothers who lost their papers and forgot the art of writing. The other twenty brothers, favored by good weather, brought their written treasures safely into a new country and became the ancestors of the Chinese and Japanese, who are still able to write.

This tradition points to the fact that the Gilyak regard themselves as closely related to the Tungusians, and also to the Chinese and Japanese.

¹ Called Tichmenevsk by the Russians.

The Nibux or Nivux inhabit the west coast of Saghalin and the coast of the Liman on the continent. Their largest villages are Arkai, Tangi, Xoi, Viaxtu, Tyk, Visk-vo, Nyur, etc., on Saghalin, and Chome, My, Xusi, Prongi, and Lahr-vo on the mainland. In summer-time the Nibux of Saghalin cross Tartar strait in boats, and many of them go over to Chome and My to catch fish and seal; in the winter, from the end of December to the middle of March, when the strait for the greater part is frozen, sledges may start from Poghobi in a northwesterly direction, and reach the Asiatic coast at My. The same clans of the Nibux are met with on the mainland and on the island of Saghalin; and the traditions of the clans clearly show that migrations have taken place from the continent to the island, and on the island itself from north to south. For example, one of the two clans forming the village of Arkai originated at Nyani-vo village in the north of Saghalin, and the other one at Tangi, the natives of which place, according to their own account, belong to the old clan of the settlement Chome on the continent.

The Lā'buñ occupy the valley of the Amoor below and above Nikolayevsk. Nighubun, Nibux, and Lā'buñ speak three different dialects: that of the Nighubun seems to be the purest and oldest form of the language, owing to the isolation of the people and absence of foreign intercourse; the dialect of the Nibux is quite similar to that of their eastern neighbors, differing from it mainly in phonetics, as in palatization of dentals; but the Amoor language differs from both the others in many ways. Its vocabulary contains a great many independent words and a large number borrowed from the Gold and the Tungus. The farther west one goes, the greater becomes the number of borrowed equivalents; and the farther east, the purer and more original the style of speaking.

The Gold who inhabit the middle portion of the Amoor, and its great tributaries the Sungari and Ussuri, call themselves Xad-janai or Nā'nai; the Gilyak they call Gilāmi, and a mixed tribe

(the Mangun) made up of Gold and Gilyak, Xadjasal. The Orochon are called by them Namkan, and the northern Tungus, Kilér. The Chinese give the Gold the name Tadsī, that is, "aborigines," whereas the latter designate the former as Nikxa ("slave"), probably a reminiscence of the period when China was subdued by the Manchu.

The social organization of the Gold is very simple, and resembles that of all other Siberian peoples. The whole tribe is grouped into clans called *rody* by the Russians, and *xala* by the Gold. The members of such clans constitute patronymical societies. All the families of a clan bear the same name. For example, in Sándaka, the region between Chabarovsk and Vyátskoye, the following names occur most frequently: Posaxara, Ojál, Xad'ér, Párminka, Áxtanka, Ónińka, Dónka, Yúkkami, Údińka, Pozár. The members of such clans are scattered over the whole territory occupied by the tribe. Some clans have a double name. Thus the clan Axtanka is also styled Beldi. The names of a great many of their clans are met with among the Mangun and Amoor-Gilyak; for example, the name Posaxara occurs among both these tribes. From this fact may be traced the race mixture of early times.

Marriage is strictly exogamic. A man belonging to the clan Párminka is never allowed to take a wife of the same family name. Before the arrival of the Russians it was the custom of the Gold to marry off their children at an early age. Girls were married by their parents as young as eight or nine years, and boys at the age of ten or eleven years. It sometimes even happened that a ten-year-old boy had to marry a twenty-year-old girl. Such early marriages are prohibited nowadays by the Russian Government, and intelligent Gold have come to understand how detrimental these marriages have been to their people. Although nominally abolished, premature sexual intercourse still continues, and contributes, no less than epidemics and alcoholism, to the gradual ruin of the people. Russian physicians who have become familiar

with the people through visits to hospitals or to their villages, assert that incest is not unusual between brother and sister and among other relatives. Wooing (*ashi mudaljur!*) and wedding are not accompanied by a waste of ceremonies. The Gold has a practical and sober side, like the Chinese, and is not given to extravagant fancies. With him sense prevails over sentiment. It is unusual for him to passionately love a woman, which the Gilyak and Ainu sometimes do.

A tendency to rationalism, due perhaps to continuous contact with Chinese culture, is one of the distinguishing traits of the Gold's character. Doji Posaxara in Sakhacha-olén, the Gold from whom I obtained much of my best material, proved an enlightened free-thinker. He did not care about his shamans nor for the Russian Church, and listened to me with pleasure and intelligence when speaking on the Darwinian theory. He quickly grasped the idea that death ends all. I believe this preponderance of intellect explains the absence of many ceremonies and customs, especially of detailed nuptial rites, as well as the absence of holidays and feasts.

The Gold buys his wife from her father. The purchase-price, the *kalym*, is called *tor!*, and consists of precious objects,—furs, Chinese stuffs, etc. In many cases, money (from 100 to 500 rubles or more) is required. The wooer, with the train of relatives and friends, betakes himself to the house of his selected bride's father. He repeats his visits several times without mentioning his purpose. On the last visit the affair is discussed, and an effort is made to come to terms on the *kalym*, about which both parties bargain and chaffer. The bridegroom need not pay the whole amount at once; the entire amount, however, must be paid before the wedding. The girl is not consulted by her father in the matter. She receives a present from the bridegroom, and is obliged to bring all her clothes and other belongings from her parents' house. The wedding is merely a drinking-bout, and is celebrated twice,—first in the bride's family, then in the husband's

house, as it has come down to us in the old heroic songs of the Turk and Mongol. As a rule, monogamy prevails; this is not fixed by law, but is agreed upon for economic reasons. A man may buy as many wives as his fortune will permit, but it is seldom that he has more than three. The wife is not the companion, but the slave, of her husband.

The Gold make no secret of their disdain for women. A woman's lot is summed up in what is termed by the Chinese and Japanese moralists "the three obediences,"—obedience, while yet unmarried, to a father; obedience, when married, to a husband and his parents; obedience, when widowed, to a brother-in-law or to a son. A man's work is simply fishing and hunting; the household and all other affairs must be attended to by the woman. The possibility of getting more work done by more drudges is their chief argument in favor of polygamy. The inferiority of woman to man is illustrated by the fact that a wife is not allowed to call her husband by his name. During the first part of the married life there is no designation by which she may accost him. When the wife has given birth to a child, she addresses her husband by the child's name; for instance, if her son is called Oisa, she must address her husband as *Oisa amini*, that is, father of Oisa. The wives of other men are permitted to call him by his own name. The sister is subject to the brother. She calls him *agha* (brother); but he speaks to her by name. A man, after the death of his wife, is forbidden to utter her name or to address another woman who bears the same name. Children are forbidden to speak the names of their dead parents.

About three months before child-birth the woman has to sleep alone, but she is obliged to perform all domestic labor up to within three or four days of her delivery, and most women resume their daily work eight or ten days after the latter event. During the first ten days the new-born infant is bathed several times a day. Immediately after the child is born, the father names it, and is at liberty to coin a new name; but a son can

assume the name neither of his father nor of his grandfather. The first name is prefixed to the clan name; that is, Doji Posaxara. As soon as a child is baptized, it receives also a Russian name, which includes the name of the saint connected with it. Some individuals even prefer to be called by this name; but the majority do not lay stress on this matter, or even forget their Christian names.

A peculiar feature of the Goldian language is that the terms of relationship are divided into two classes. The names of relatives on the paternal side are different from those on the maternal side. Moreover, each of these classes is again divided, distinguishing terms used for relatives older from words for those younger than father or mother. The elder brother of the father is called *fafá*; his younger brother, *achá*; the father's elder sister, *dadá*, his younger sister, *ghughú*; the mother's elder sister, *dadá*, her younger sister, *oukd*. Here, as well as in the Manchu language, symbolism of sounds plays an important part in the names of blood relations, *a* and *m* representing the male sex, *x* and *n* the female; for example, *amí* (father) and *xnyd* (mother), *dawá* (grandfather) and *dšnyd* (grandmother), *amxá* (father-in-law), and *xmíxá* (mother-in-law).

Divorce is common, but it is the exclusive privilege of the man; the wife has no right to part from her husband. The grounds on which a man may divorce his wife are disobedience, barrenness, lewd conduct, and foul and incurable disease. In a word, the husband can send his wife back to her parents whenever he gets tired of her. When a wife makes herself insufferable during the honeymoon, and is sent home by her uncongenial husband, he can recover the whole sum paid for her. I myself was witness to such an occurrence; and it is hardly necessary to say that such an unfortunate, after returning to the *patria potestas*, is exposed to shameful treatment. The husband is not obliged to keep faith with his wife. Intrigues with other women are frequent, and prostitution is customary. Children born out

of wedlock are killed by their mother's father immediately after birth.

Sexual diseases, chiefly syphilis, rage terribly among the Gold. Epidemics of smallpox and trachoma (a contagious inflammation of the eyes which may lead to complete blindness and can be cured only by an operation) prevailed at the time of my stay in the Amoor country. Leprosy is much less prevalent among them than it is among the Russian settlers. A physician commissioned by the government last summer to travel from Chabarovsk to Sophisk, and to take all lepers to the lazaretto of Nikolayevsk, found seventeen Russians and but one Gold afflicted with this disease.

Remarrying is permitted after the death of either spouse after a term of three years has elapsed, if the funeral rites have been performed in the legal way. The guardian of the orphans is the uncle. Levirate marriages are permitted, but only on condition that the widow herself agrees to take the brother of her deceased husband. Even if she should not marry him, he is her natural protector, and superintends all the affairs of her house, into which he may move.

A curious investment for capital is as follows: When a poor man wants to buy a girl, he looks for a patron (who may be related to him or not) to advance the necessary funds. He need not repay the loan in cash, which he would probably never be able to do; but, if he should have a daughter by his marriage, the money-lender will take possession of her when she is grown up, and sell her on his own account. The only risk the patron runs is that his client begets only sons.

Alliances between Gold and Chinese are sometimes contracted. Chinese traders roving about on the Amoor often take Goldian wives. So far as I know from personal observation, such marriages are apt to be childless.

My last excursion was among the various tribes along Amgun river, one of the largest tributaries of the Amoor. These tribes

are a branch of the widespread Tungusian peoples. It was not easy to get permission for this trip, because extensive gold-mines are there, and the mining companies do not look kindly on foreigners, particularly those who they think would be inclined to criticise. They may be right in this. Some years ago a German, Count Keyserling, made a like attempt, in which he was unsuccessful. After making sure that the highest official of the district had no objection to my trip, although, on account of the advanced season, he tried to dissuade me from making it, I had to apply to the chief director of mines, who is the government supervisor, and then to the agents of the mining companies themselves. I was kept waiting a long time, and finally succeeded, through the firm of Kunst & Albers, in obtaining permission to make the trip on one of the companies' steamers.

On the 27th of August (8th of September, Russian style) I left Nikolayevsk by the steamship *Gold* in company with General Iwanow and a party of engineers, the ship taking my row-boat in tow. On the third day we arrived at a settlement about 600 versts distant from Nikolayevsk, called Kerbinsk, where I engaged two Koreans as rowers. The following day I started in my boat to travel the whole way back, down the Amgun and the Amoor, as far as Nikolayevsk.

The banks of the Amgun are inhabited by two Tungusian tribes, which are called Neghidal, or Neghda, and Tongus. The Neghidal are divided into seven clans,—Tonkal, Chumykhgil, Ayumkan, Neachikhgil, Udan, Chukchaghil, and Toyemkoi. There are six Tongus clans,—Butar, Adjan first and second, Laiyghil, Djer, and Muxtaghir. Each clan is a unit, and is governed by its own chief (*starosta*). The tribes and their clans have a general chief (*golowa*, that is, "head") residing in the village of Udsk, who receives the orders and edicts of the Russian local authorities concerning the natives, and acts as mediator between his countrymen and the government. He has the same authority over the aborigines as his Russian colleagues have over the Russian

settlers. Once a year, in the winter, the head official of the district of UdsK, the capital of which is Nikolayevsk, makes a trip through his territory, up the river to the coast, thence southward along the coast back to Nikolayevsk, to collect taxes, to hear complaints of the natives, and to learn their needs.

The seven Neghidal clans are classed in two groups,—Neghidal proper, or Tonkal, who comprise the four families named Tonkal, Chumykhaghil, Udan, and Neachikhaghil, and occupy the lowlands of the Amgun; and the Chukchaghir, who comprise the other three families, Chukchaghir, Ayumkan, and Toyemkoi, and live on the banks of the middle and upper part of the Amgun. These two groups have no distinguishing characteristics; they speak the same Tungusian dialect and have the same customs. The only observable difference is that the culture of the Chukchaghir is influenced in a higher degree by the Tongus and Yakut, while the Neghidal, owing to their local conditions, have derived much of their culture from the neighboring Gilyak.

The population of the Amgun is not large. Their villages, which are some distance apart, are small, consisting generally of but two or three houses, though there are sometimes as many as six or eight. The latest statistics give the following approximate numbers: total of both sexes, 766, of whom 423 are males and 343 females. Of these, 215 men and 187 women are Neghidal, 188 men and 140 women are Tongus. Besides these, there are a few Samaghir (20 men and 16 women) and a small number of Yakut who are peddlers. Near the Russian villages, Koreans also have settled; these are the best agriculturists of the country, and grow excellent oats and potatoes.

The Neghidal live in very small square houses supported on thin rafters and covered with birch-bark, whereas the tents of the Tongus have a circular ground-plan, and taper to a cone, like those of the closely related tribe of Saghalin, whose tents are covered either with prepared fish-skin or tanned reindeer-skin. The Neghidal near the mouth of the Amgun, who show strong evidence

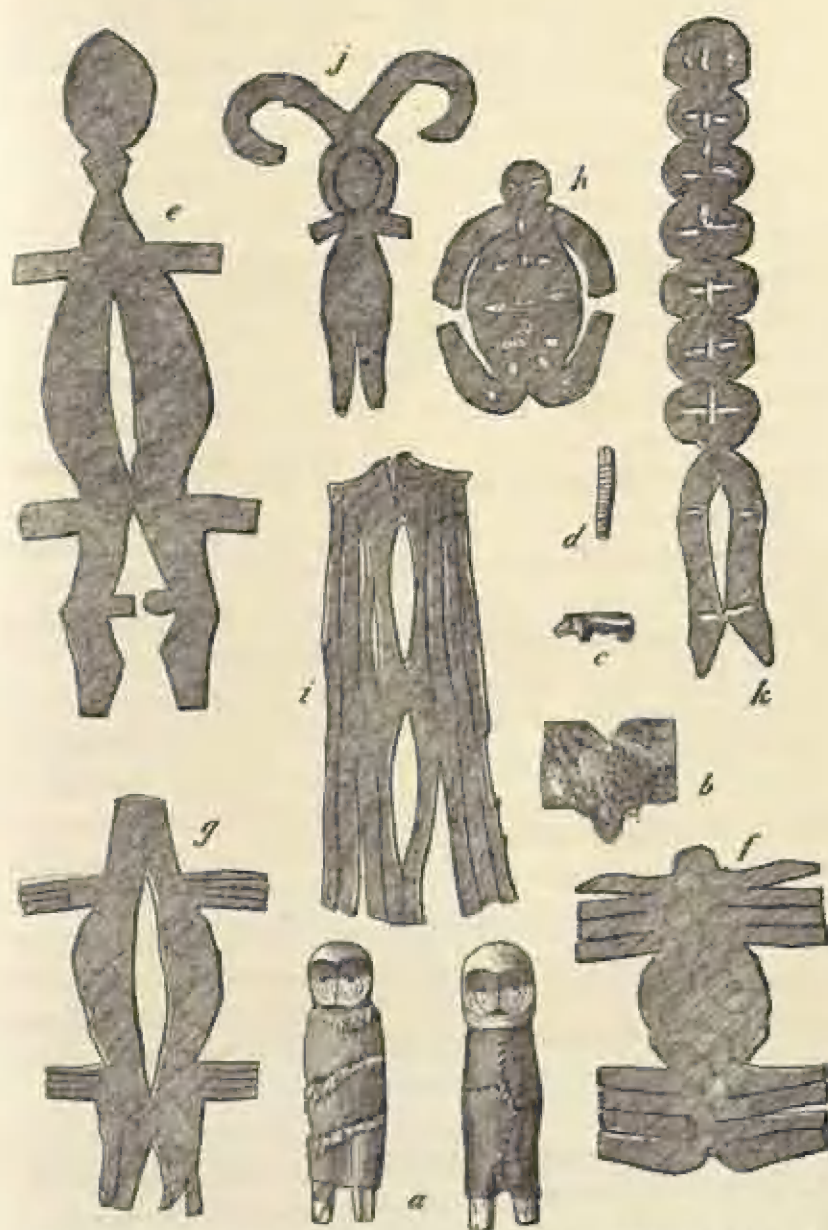


FIG. 41.—Amulets of the Olcha of Saghalin. (Cat. Nos.: a, 276; b, c, d, 278; e, 280; f, 282; g, 284; h, 286; i, 288; j, 290; k, 292.) 1 nat. size.

of Gilyak influence, are beginning to build houses like those of the Gilyak. In the village of Dalji I saw people building a winter frame-house of strong timber. In the same village some of the old houses were empty; those of recent times were erected on piles, in Gilyak fashion, but they were extremely small, and miserable in appearance. The craft universally used on the Amgun is the birch-bark canoe, like that of the Gold; but while the Gold use it only for hunting, and have wooden boats besides, the natives of the Amgun use their birch-bark canoes for all purposes. No one among them possesses more than ten reindeer, while on Saghalin there are some people who have a hundred and even two hundred head. They do not use reindeer for drawing sledges, but in the winter drive with dogs, because they trade in Nikolayevsk, where it would be impossible to obtain sufficient feed for the animals. Epidemics have destroyed the herds of many families during the last few years. As all these tribes embraced Christianity long ago, there are no traces of shamanism or of their former religious conceptions. The Olcha of Saghalin have preserved more of their peculiar character; and on the coast of Okhotsk sea, as well as on Patience bay, I found among them a strange kind of amulet cut out of reindeer or salmon skin. Amulets of this sort, attached to a string, are worn round the neck. They may be made by any one, even by women. Most people copy or imitate them without understanding their proper meaning. They claim to have learned the art from their ancient shamans, who have handed it down from generation to generation. The specimens here illustrated (figure 41) were obtained in the village of Wal, in the northeastern part of Saghalin, and are as follows:

a, two wooden figures (the larger representing a boy, the smaller a girl) are placed on the chest of a new-born child to prevent it from crying. They are styled *séwon* and *gakse*, respectively.

b-d are worn around the neck for the purpose of curing a

cough. *b* represents a bat, and is cut out of reindeer skin (*dal-bandd*); *c*, a wooden bear (*shird*); and *d*, a wooden wood-worm (*ikiri*).

e represents a mammal (*wä*), about which, unfortunately, little is known. Head, neck, body, legs, and tail are discernible. It serves for curing stomach-ache.

f symbolizes a sea-lobster (*sain'ghu*), and cures pulmonary diseases.

g represents an animal (*pdttaxa*) having four toes on each foot and crawling on the ground. It is said to cure aches in the hip-bone. The natives claim that they have never seen this animal alive.

h represents a frog with spots on its back (*uddla*). It is prescribed for rheumatism in the shoulder.

i is said to symbolize a worm living in the water (*pa'xa*) and to cure diseases of the kidneys. It has two heads and six tails.

j gives the outlines of the human heart (*ma'wan*), and illustrates very well the mode of sympathetic healing. It is used in all cases of cardialgy.

k is a seven-headed monster (*uächuku*) with a short body and a small tail. Particulars about it are unknown. It is employed to allay burning and pricking in the chest.

At the present time the Olcha bury their dead in the same way as do the Russians. In former times it was customary to put the bodies on trees or on high wooden frames. I saw several such graves in the outskirts of Wal. Four vertical beams were driven into the ground, forming a rectangle. On the longer sides of the rectangle, about five feet above the ground, there were two horizontal cross-beams, on which the coffin rested. The coffins were boat-shaped, and were closed on top by logs of wood packed closely together. The body was wrapped in birch-bark and placed on its back, the face turned toward the east. I saw one grave, in the form of an equilateral triangle, where there were but three beams. Sometimes the tombs reached a height of seven feet.

Near the village was the grave of a child, which rested on two poles. The coffin, which was about three feet above the ground, consisted of two trough-shaped parts put together like nutshells. The perforated leaf-shaped ends were set into the beams. The corpse was wrapped in a linen cloth, and the skeleton was therefore invisible. Under no circumstances would the people allow the bodies to be touched or inspected.

On the small isle of Hete-vo, in the northern part of a deep inlet on the northeastern coast of Saghalin, I found the ruins of two old graves. From one of them the coffin had fallen out and lay a wreck on the ground. I found there the rusty blade of a spear, and an old sword which is undoubtedly of Japanese origin, as is shown by the ornament on the guard. It has the shape of the Japanese katana of medieval and modern times, with a single edge, and is slightly curved toward the point. These decorations of the guard have arisen, since the close of the fifteenth century, in the schools of special artists in metal.

When I took up the two pieces, the Tungusian men who accompanied me (we were a hunting-party) protested vociferously, saying that the dead person would be angry with us. Then they refused to take me in their boat, for if the fish should catch sight of the weapons taken from the grave, they would run away, and the villagers would never have any more fish. At last I resorted to the expedient of wrapping the treasures in a piece of old newspaper, that the fish might not see them, much to the satisfaction of my Tungusian friends, the timid fish, and myself.

The Olcha have special rites in burying drowned persons. I had an opportunity to inspect the grave of one, which was situated a short distance from the village of Wal. The accident had happened the preceding year, while the man was fishing in a drunken condition. A Latin cross had been erected over his grave, and a row of four larch trees had been planted behind it. The trees were ornamented with whittled willow (*Olcha, tunda*; Tung., *séxta*), which was attached to the branches by means of

bast-fiber (Olcha, *eldk*; Tung., *eldka*). In front of the grave was the boat in which he had been drowned. The prow pointed toward the inlet, and the rudder lay in the boat. The paddles and the oars had been crossed and stuck into the ground on either side of the boat, each pair tied together with seal-skin straps. A similar strap was attached to the cross and connected with that of the oars. The harpoon for catching seal was suspended from the latter strap, whereas the wooden poles belonging to the same implement were left in the boat. This is done because the dead person is supposed to continue his earthly life on the other side and to have the same needs there as here. There was a stake behind the four trees. It had served at the funeral as a tying-post for the reindeer which was slaughtered in honor of the deceased. On the ground lay a birch-bark plate, in which the heart of the animal had been left.

After an accident such as that described, the people greatly fear the sea and the river, and fishing is suspended for ten days. At the end of that time the oldest and strongest man goes off by himself for three days to catch fish. If he prospers, or meets with no accident, the others join him in their usual work on the fourth day.

So far as I have been able to form an opinion regarding the traditions and legends of the Amoor tribes, many of the latter have been brought from the west to the east. The Gold have undoubtedly the richest store of myths, and the Gilyak are second to them. The Olcha, the tribes of the Amgun, and all others of the Tungusian people, have either lost their ancient folklore, or else they never possessed any. They themselves are inclined to the latter opinion. Many Gilyak and Ainu stories bear such striking resemblance to those found among the Gold that their origin is sufficiently clear. This is more strongly elucidated by the fact that the tales of the Gilyak appear as mere extracts of or condensations from those of their western neighbors, who have preserved fuller details in their original shape.

Interest, therefore, in the rise and growth of folklore in eastern Siberia centers chiefly around the Gold. There are various kinds of oral literature,—short accounts in explanation of natural phenomena, reports on the creation and first population of the world, and long, rather complicated, novel-like stories dealing with adventures of knights-errant and heroines, their fights with evil demons and monsters, their wanderings in the wilderness, their love affairs, and final marriages. Some of these tales are epic in character, and abound in interpolated episodes which interrupt the main action. A comparatively great antiquity must be attributed to all Goldian folklore, since the language in which their traditions are told differs widely from the colloquial speech of the present day. These differences are found in etymology and lexicography; and a comparison of the language with the modern style of conversation indicates two different dialects, or at least two separate epochs in the development of the same tongue. It is therefore probable that the Gold were in possession of those traditions when they migrated to their present habitat. Nevertheless, it is not likely that their literature is the result of their unaided efforts. Many of their tales can be traced back to the Buriat and other Mongol tribes of central Asia; and, moreover, there are remarkable coincidences between Goldian folklore and Mongol and Turkish epic poetry.

It is a most striking fact indeed that nearly all institutions, customs, and manners as described in the tales of the Gold (and in many cases hardly to be explained by the modern state of their life) bear a marked resemblance to the outlines of culture as sketched in the epic literature of the Mongol and Turkish nations.

So, after all, central Asia is to be considered as the country which originated and handed down the tales of the Gold, and consequently of all other tribes of Amoor river. This question is closely connected with a great number of as yet unsolved problems regarding the origin and development of central Asiatic

culture. We cannot say yet which of the peoples produced or participated in the culture contained in the Turkish, Mongolian, and Goldian traditions. Presumably it is the culture of ancient Tibet, for Tibet is the stage of the Mongol epopœia, and its literature possesses a voluminous national poem of the culture-hero Gesar, from which the subjects of Mongol poetry are apparently derived. Unfortunately that comprehensive Tibetan work has not yet been published or even translated. It must be made the basis of all further research of those far-reaching questions.

It is hoped that one of the chief results of my investigations may be the finding of the missing link in the intellectual and psychological connection formerly existing between the Amoor tribes and the peoples of central Asia, and that thereby we may draw nearer to the possibility of assigning to the latter their true position in the history of Asia and of all mankind.

A tale recorded in Sakhacha-olen on the Amoor may serve as a specimen of Goldian folklore. There are some contradictions in it, which prove that the single parts of which it consists were primarily independent tales composed at a later time. Fuji is a general name for a heroine or Amazon, and Marga is a noun appellative signifying a hero. This word is surely allied to the Mongol and Turkish terms *mergen*, *mirgân*, whose original meaning is "a good archer or hunter," and which are combined with the proper names of heroes. The story is as follows:

A long while ago lived the two sisters Fuji. They subsisted by shooting birds and wild animals. They lived thus a long time. They lived a long time, killing birds and wild animals.

Once upon a time, late in the evening, the elder sister Fuji began to talk thus: "We have no husbands. How can we live without a man? There are males and females among all the birds and wild animals, and even among the small insects."

The younger sister said, "We live quite well as we are now."

The elder one replied, "Let us go out and search for a man;" but the younger sister opposed her, and fell asleep. When she

awoke in the night, she saw her elder sister sitting beside a large iron kettle on the hearth, washing herself.

The younger sister asked, "What are you doing there? What are you boiling in that kettle?"

The elder sister answered, "Why do you not come over here? Come along, that I may comb your hair well!" Then she took her younger sister by force, combed her hair well, and dressed her nicely. Both of them put on all their clothing, and went away, went away.

They wandered on until they came to where two roads crossed. On the one, the main road, horses and carriages could drive side by side, whereas the other was very narrow.

The elder sister said, "Let us stroll about;" but the younger sister refused. The elder Fuji rushed upon her, and the younger Fuji fell down. Then the elder one said, "You will go this way, and I shall take the great road where horses and carriages drive:" but the younger Fuji again refused. Then the elder began to beat her, and, beating her, went away on the road where horses and carriages drive.

The younger Fuji, weeping, set out on the narrow path, and walked and walked. At last she reached a house on the bank of a river. Leaning her chest on her walking-stick, she stopped before the door, and cried to the Burchan within, "I crave for water; I came to the lake, my mouth is parched; I came to the river, my throat is parched." Seven birch-bark cups full of water were brought to her, which made a noise like "Beicha, beicha, beicha."¹ Seven birch-bark cups were all emptied by her. Thereupon she went on, and went on, till she came to another house. It was late in the evening. In the courtyard were heaps of human bones. She thought that the people had caught and killed a great many wild animals.

Fuji entered the house, and found that it was filled with

¹ These words are said to represent the splashing and spilling of the water.

human bones. Seven Baldheads, all brothers, were sitting there round about. The youngest brother was nibbling at a skull. When he beheld Fuji, with much ado he cast the skull under the hearth, exclaiming, "Though we remained at home today (not having gone hunting), we have fresh meat to eat, for a little doe has come to us."

At once they all fell upon Fuji, caught her, held her fast, threw her down on a heap of grass, and made a dash at her with knives. Fuji transformed herself into a needle,¹ and jumped into the ashes; and it was as if she had wholly died away.

The Baldheads took a *Pangafun*² and began to practice witchcraft. "Where has she gone? Is she in the house? *Chahā chahā tyūkui!* Through what metamorphosis has she passed?"

"She has transformed herself into a needle, and has jumped into the ashes, *chahā chahā tyūkui!*" suddenly came from the *Pangafun*. Then they commenced to stir the ashes, looking carefully all around. They put the embers on their palms, and finally discovered her.

Fuji became again a human being. They attacked her once more, and she changed herself into a worm and crawled into a wooden pillar.

The seven Baldheads lost her again. The youngest brother of the seven moved the *Pangafun* and resorted to magic. "*Pangafun, chahā chahā tyūkui!* Where has she gone? Did she step out on the road, or is she in the house?"

"*Chahā chahā tyūkui!* She has taken the shape of a worm and crawled into the wooden pillar; *chahā chahā tyūkui!*"

Then they took an axe and began to chop the pillar in two. They found her in the middle of it.

¹ See the same transformation in Schiefner, *Holdensagen der Mandschu-Indianer*, *Talaren*, XIV, 445.

² The *Pangafun* consists of a stone with a groove running around its central part. A string is wound around the stone in this groove, the free end of which is held in the hand. It is used particularly to find out where a lost object may be, the belief being that the lost article is hidden in the direction in which the stone moves.

Fuji resumed her real shape. They caught her again, and again they attacked her. Thereupon she transformed herself into a drop of blood and jumped on the wall, from which she looked down upon them.

After losing her again, they took the *Pangufun* once more, and began to practice sorcery. "Through what metamorphosis has she passed?"

"She has transformed herself into a drop of blood and jumped on the wall; *chān chān tyūkui!*"

At this moment Fuji changed herself into a gadfly¹ and flew away. She flew away and away. When she cast her eyes back, she saw seven gadflies coming behind her. She took the shape of a skunk,² and ran farther away. When she had gone a short distance she looked back and beheld seven skunks following her. Now Fuji transformed herself into a swarm of a hundred insects,³ which flew in all directions, but afterward came together again at the same spot. The Baldheads assumed the shape of Fuji and followed her.

So they all went and went. In the evening they came to a house. In front of it were the wooden frames on which fish are hung to dry. The seven Baldheads tumbled so violently against the upper crossbeam that it pierced their breasts and held them fast.

Fuji saw there a great many garments, ear-rings, and nose-rings, which seemed to belong to charming and beautiful women. She thought to herself, "Where are the devils? Where are the devils? They are dead, I am sure. Now where am I to go? I feel so sad that I don't care whether I go hither or thither."

She opened the door of the house and entered. There was nothing at all inside but sleeping-benches and a few things

¹ In the epic of *Gessu*, *Rogmo Gou* is metamorphosed into a gadfly (Schmidt, *Die Thats. Begle. Gessu Chant*, p. 201).

² See *ibid.*, p. 284.

³ See *ibid.*, p. 280.

belonging to a man. She sat down on the stove, lighted the fire, smoked tobacco, and remained sitting there. On the back part of the hearth were two dishes bottom-side up. Fuji took them, and found that one of them was filled with tallow and the other with meat. She took out a piece of the meat and a piece of tallow and ate them. Then she sat on the stove again and smoked tobacco.

Suddenly a croaking voice cried from a mountain in the forest, "Have people come into my house, or are devils come? I live all by myself, and still smoke is rising from the chimney. There was no fire when I left the hut."

Fuji took her cap and gloves and stepped out. There she met the host of the house, who immediately addressed her thus: "I am the Andamarga; I am not a devil. Andafuji,¹ do not be angry! We need not be afraid of the devils. Pass the night here; please sleep here for the night!"

Fuji received the game he had brought from the chase, and went into the house. The Marga took off his things, and entirely undressed himself. Fuji cooked meat, and when it was well done she put the dish before him and sat down. He said to her, "Andafuji, where are you going?"

She answered, "Andamarga, devils have pursued me. I escaped from them and have come hither."

He questioned, "What devils were they?"

She replied, "The seven Baldheads."

He said, "Oh, I know them. I have long had a grudge against them. If you will live here, the devils can do you no harm."

Fuji consented. Now the Marga went hunting daily, and shot many birds and wild animals.

After a while there came a day when he did not go out, but stayed at home. He said, "Andafuji, those devils will come today."

¹ *Anda* (in other Tungusian dialects, *amald*) means "friend," and is the usual form of greeting. *Andafuji* has approximately the meaning "my dear Fuji."

Toward noon they approached, making a sound like "*Chokor, chokor, chokor, chokor!*"¹ They cried, "Jaghdarin-samá, are you at home?" The Marga remained silent. They cried once again, "Jaghdarin-samá, are you at home? The animal we are hunting came this way."

Then the Marga replied, "If that is so, come and take it! But why has the animal that is shy of such people taken refuge in a human dwelling-place? Wherefore did my deer not remain with you? But why do you bother me with your idle talk? Fuji is here, indeed! Come, enter and take her!"

Then the Marga exclaimed, "Andafuji, come hither!"

Fuji arose and drew near. Marga transformed her into punk and put her into a pouch for a strike-a-light. After waiting for her in vain, the devils consulted the *Pangafun*, "*Chahs chahs tyhkui!*" and received the answer, "He has transformed her into punk, and put her into a pouch, *chahs chahs tyhkui!* He has transformed her into punk, and put her into a pouch, *chahs chahs tyhkui!*"

The Marga took the pouch between his fingers, and threw the punk and flint on the ground, exclaiming, "There, take her up from the ground!"

The devils said, "*Eidaghoi, eidaghoi, ridaghoi*, we must resort to witchcraft once more;" and they took the *Pangafun* and began with their sorcery. "He has taken the pouch between his fingers, *chahs chahs tyhkui!* Do not stay here long, else matters will go badly with you."

The Marga said, "Be that as it may." The youngest brother of the seven Baldheads ran away. Then the Marga thought to himself, "All will now end in sorrow, for he will come and kill me." Again the Marga went out hunting and shooting birds and wild animals.

One day he did not go out, but remained at home, saying,

¹ This word is said to depict the approach of the eldritch demons.

"Andafuji, I will wander with you to another place." With these words he presented her with an iron rod (such as is used to soften fish-skins), and they took the road into the woods, and went on and on. At last they came to a house. Inside were six Fuji (heroic women). The Marga said to them, "You all stay here together with this Fuji."

The six Fuji replied, "Thus we have become seven."

The Marga said, "I shall go out to fight with the seven Baldheads. Day and night you must keep the door closed." Thereupon the Marga went away.

There were now seven Fuji in that house. They had much work to attend to. They had to fetch fuel, to draw water, and to split wood. After doing this they locked the door. Thereupon a roaring noise sounded from the river. The struggle had commenced. The seven Baldheads and the Marga fought day after day and night after night. When they stopped to rest a while, the youngest brother of the seven Baldheads forsook the place of combat and betook himself to the house. He cried, "Open the door, open the door!" but Fuji sat silent, without answering him. He forced the door open and entered the house. Then he said to Fuji, "Pick the lice from my head!" She refused peremptorily. He drew near her, and repeated, "Fuji, pick the lice from my head!"¹ Fuji began to hunt for lice in his head. He put his head on the edge of the sleeping-bench. She took her iron rod and struck him on the head with it. Then the youngest brother of the Baldheads took to his heels. Fuji passed three nights there.

God proved gracious. The Marga returned, and cried, "I have fought with the seven Baldheads, and have slain them all.

¹ Picking lice from each other's heads is a sign of mutual friendship or love. It takes place, therefore, between spouses or between related women. The husband does not look, of course, for his wife's lice. The Baldhead's importunities are in this case nearly like a declaration of love in concrete form. Lice-eating often occurs in the tales of the Gold, and may be observed nowadays in the daily life of the Gilyak.

I am a devil. I shall go away to a remote place. If I live I shall return, but if I die I shall not come back."

The seven Fuji moved into the house of the Marga, and passed three nights there. Seven Marga arrived. Six of them took the six Fuji away with them as their wives. Fuji remained behind alone. The seventh Marga wanted to marry her; but Fuji refused, so the Marga went away. A whole year elapsed, during which time she lived there by herself. The Marga finally appeared. He asked her, "Where have those six Fuji gone?"

Fuji replied, "All of them have got men and gone off."

The Marga said, "Why have you not gone with them?"

Fuji answered, "I was true to you; I have waited for you."

Fuji and the Marga now became man and wife. They lived happily for two years. One day Fuji shed tears, and when her husband asked the reason, she said, "I long for my elder sister. I do not know whether she is dead or alive."

Then the Marga said, "Your sister is living not very far from here. If you wish, you may go to her as a guest."

So Fuji started. She went to her elder sister. The elder sister now had a husband. Fuji stayed there for two nights; then she returned to her own home. Her husband said, "Why have you returned so soon?"

So the Marga and Fuji dwelt again in their house. Once again the elder sister Fuji and the younger sister Fuji came together. They brought along all their property, and divided it equally between them. They divided everything. Then the elder sister Fuji returned to the house where she lived, and the younger sister Fuji returned to her house. They lived in their houses. They lived a long time, as they had lived before, and their husbands went hunting and killed birds and wild animals.

PHYSICAL AND PHYSIOLOGICAL OBSERVATIONS ON THE NAVAHO

By ALEŠ HRDLÍČKA

The following notes form a portion of the results of the writer's part in the Hyde Expedition to the Pueblo region in 1899, under the direction of Prof. F. W. Putnam, curator of the American Museum of Natural History.

The Navaho Indians, of Athapaskan stock, are a numerous,¹ comparatively wealthy,² intelligent, and, on the whole, very promising tribe of Indians occupying a reservation of over 12,000 square miles and the neighboring parts of the country in New Mexico, Arizona, Colorado, and Utah. The principal scientific attention thus far devoted to this important tribe has been by Dr Washington Matthews and by Messrs Backus, Catlin, Eaton, Hodge, Letherman, Schoolcraft, Simpson, Stephen, and Stevenson.³ Most of the recorded observations relate to the customs and mythology of the people. During the work among the Indians, carried on under the direction of Professor Putnam for the World's Columbian Exposition at Chicago, two series of measurements of the Navaho were made, one of adults (by Dr Matthews), the other of school children (by Antonio Apache). I have been accorded permission to incorporate these measurements in the present study. My own work had for its main object an inquiry into the physical and physiological character of the Navaho, and was conducted principally in Chaco canyon. Fifty adult males and thirty adult females were measured and

¹ Various estimated to number from 15,000 to 25,000 individuals. The Eleventh United States Census placed the population at 17,204.

² Individuals range in worth as high as \$10,000.

³ See Matthews, *Navaho Legends*, and bibliography therein.

examined, and photographs and casts of the faces were made. Opportunity was presented for observing the people during a large feast and in different parts of the reservation as well as beyond its borders, and for three weeks I lived with a number of Navaho while conducting excavations. The present paper comprises a summary of this work, supplemented by such general observations as may be necessary to complete the more technical data.

The Navaho show good physical development; excessively strong or naturally feeble individuals are rare, as also are very fat people and those who are congenitally deformed or deficient. The average Navaho male does not exceed in strength the average white man; a large majority of both the men and the women have regular, pleasant features, and individuals of both sexes rise to a certain degree of beauty.

The Navaho show considerable difference in color and measurement, and cannot be considered a radically homogeneous people, but their mixture is not recent. They range in color from light, lusterless tan or quadroon tint to a dark shade of sepia. The men were found to range in height from 162.4 to 183.0 cm., the women from 148.4 to 166.3 cm. The excess of armspread over height averages in men 4.1 cm., in women 3.3 cm. The lower extremities are in men 46.6%, in women 46.8%, of the total body-height. The average chest width of the men at nipple height is 29.7 cm., the depth 21.6 cm. In most cases the head is flattened posteriorly, and this flattening is more frequent and more pronounced in men than in women. So far as can be determined, this flattening is not produced intentionally, but is the result of the pressure of a small pad used on the baby-board as a head-rest. When the child is strapped on the board, the head has little freedom. The flatness of the head is preferred by the Navaho to occipital protuberance. On account of the depression the diameters of the head are distorted. Notwithstanding this, it is plain that most of the members of the tribe are of

brachycephalic type. A few mesocephals and one dolichocephal were found.

The face of the Navaho shows moderate prognathism; the chin is well formed; the nose measures in men 5.38 cm., in women 5.0 cm., in length, and 4.0 cm. and 3.6 cm., respectively, in width, and shows fair height. The malars are generally somewhat prominent. The average height of the face to nasion in men is 12.0, in women 11.3 cm.; to the hair line, in men, 18.9, in women 17.76 cm.; the diameter of the bizygomatic maxillary in men is 14.7, in women 13.8 cm. The hands and the feet, as well as the legs, are smaller in the Navaho than in the whites.

The men pluck the hair on the face, but occasionally wear a mustache. The hair on the head is worn long by both sexes; the women often wear it loose, the men tie it in a knot behind. The color of the hair is frequently brownish or rusty; this is an acquired tint, and may be due to exposure to the sun. The favorite and quite frequent shampooing of the head with suds made from yucca-root may also have some effect on the color of the hair. In the young the hair is invariably jet-black. Navaho children appear for the most part very well nourished and strong. The mother nurses the child up to its second year and sometimes for even a longer period. The adolescents among the Navaho, as among other Indians, are somewhat more advanced toward maturity, on the average, than whites of corresponding age. This is seen in the differentiation of the male and female types, the development of breasts and pelves. Navaho children born of young parents are not appreciably smaller or weaker than other children of corresponding age. The aged do not exhibit such a degree of decrepitude as is usually found among the whites. White hair appears in most cases after fifty years, sometimes later, rarely before. There is no baldness, but aged persons bear a great many wrinkles on their faces. The oldest person heard of was, according to events remembered,

slightly over a hundred years. The oldest individuals actually seen were not over eighty years of age.

The period of puberty in women varies from twelve to fourteen years; the period of menopause could not be ascertained, most of the Navaho not being certain of their age. Childbearing ceases apparently at greatly varying ages.

The women show a much larger amount of adipose tissue than the men, but the proportion does not exceed that observed in the whites. The breasts are usually well developed and of medium size; the form of those of women who have not borne children approaches the hemispherical; the nipple is large, the areola pronounced. The lumbar region shows but slight curve; the gluteal region is broad and rather flat.

The average pulse, respiration, and temperature records obtained are remarkable principally by reason of the low pulse. They are as follows: Pulse, males, 69.2; females, 74.9. Respiration, males, 17.7; females, 19.7. Temperature, males, 98.75° F.; females, 99.1°.

The Navaho can bear prolonged loss of sleep better than the average white, and the same rule applies to extremes in diet and exposure. The Navaho male is an accomplished rider and makes a good driver; and altogether he is a very good, able, and intelligent workman. As a tradesman, however, he is not a success, particularly among his own people. The women are deft weavers, producing the celebrated Navaho blankets. The regular and often beautiful designs on these blankets are individual creations, produced without the aid of actual patterns. Numerous belts, garters, and hair-bands, as well as a few decorated ceremonial baskets, are woven. But little pottery is manufactured, and this consists of unglazed and undecorated cooking utensils. Water-gourds woven from plant fiber and covered with gum are occasionally used, but they are said to be derived from the Ute, among whom they are common. Each Navaho man makes his own moccasins and leggings.

A regular handicraft may be observed in the tribe, namely, silversmithing.

The Navaho lives alone with his family on a ranch, but occasionally two related families may be found in a cluster of hogans or huts. There is a mythological explanation for this mode of living, connected with the ancient Pueblos.* A girl becomes marriageable after puberty; a young man may marry when he possesses enough horses or other property to exchange for the girl he desires. The price paid for the girl is divided among her relations, and it represents a test of the abilities of the young man rather than the girl's actual value. Unions are very seldom sterile; the usual number of children is from two to six. Polygamy is still quite prevalent; but the women are very modest, and very little mixture with the whites is found.

The dwellings of the Navaho consist in some cases of a generally temporary hut built of cedar branches or partially of stones; in other instances a more or less conical hut is built of trunks and branches of cedar or pine, covered with earth. Some of the more progressive natives erect rectangular houses of adobe or stone, similar to those most generally constructed by the whites in that section of the country.

The material possessions of the Navaho consist mainly of sheep, goats, and horses. He cultivates little besides corn and, in a few localities, melons and peaches. His diet is irregular and consists principally of bread and meat. Families possessing goats use their milk; coffee is eagerly sought. No information could be obtained of any native fermented drink. The women hold property in their own right.

In his dealings with the white man the Navaho is fairly honest and reliable, but in this respect much depends on the person with whom he deals. In rendering service for profit, the Navaho, like most people, of whatever race, will aim to get as great a return as possible. But the money gained possesses for him only a

temporary value; he will spend his earnings freely, often unnecessarily. To the Navaho hoarding is unknown.

The Navaho is a good guide and a safe companion. His knowledge of the country through which he roams seems almost phenomenal. His disposition is almost invariably bright and cheerful. He knows or will improvise an almost endless number of short songs; but his melodies seem to be rather limited in range, and to the ear of the white person are not altogether pleasant. His sense of humor is keen; modesty is manifested in young children and is pronounced in both men and women. As among other Indians, superstition is prevalent. The Navaho are not demonstrative in their family affection, save in the case of mothers toward their children; nevertheless they seem happy in their family ties. Jealousy exists. The natives of both sexes are fond of personal adornment; women exhibit some degree of coquetry. The men are passionately fond of racing and gaming, and a few of them are inveterate gamblers. The women have few games of their own, but will occasionally participate in a game or a race. The Navaho are not capable of doing business among themselves, through a tendency to suspicion and dissatisfaction. The old are respected and their advice considered. The old women in particular are shrewd and have considerable influence over the young women. Among themselves the people are hospitable. They preserve many legends and traditions and have many interesting dances and ceremonies.

Occasionally a Navaho will commit a crime, usually murder; but in by far the most cases, the deed is the result of drunkenness. Suicide is sometimes undertaken as a result of jealousy, extreme poverty, or drunkenness, and when the subject is a married man he usually also kills his wife and children. In general the Navaho is easily grieved, excited, or angered, but he is not revengeful.

From the medical point of view the Navaho are found to be subject to a number of disorders. Insanity is exceedingly rare; the only case observed or learned of was that of a man about

seventy years of age who was suffering only mild dementia. No case of epilepsy or idiocy could be traced; there are, however, a few cases of feeble-mindedness.

The most frequent of all disorders of health among the Navaho are stomach and bowel complaints, the causes of which lie in the character and irregularity of the meals, long periods of hunger at one time and excessive feasting at another, and the consumption of much half-baked bread charged with cheap baking-powder. Malaria is rare; a case of consumption is found occasionally; rheumatic pains are a frequent subject of complaint; tumors are very rare. There are many native medicine-men, whose treatment consists of continued incantation and medication. The latter comprises the administration of certain vegetal drugs and of articles supposed to have magic healing power. Charlatanism and deceptive tactics, such as pretending to suck out the cause of the disease, are also engaged in. But little surgery is practiced.

The Navaho know but little about their origin. They pretend to have entered this world from an underworld.¹ My informant spoke of the opening into this world as having been situated in the not far distant La Plata mountains. The early history of the tribe is intimately associated with the *Kisani* or ancient Pueblos. They claim to have occupied regions adjacent to and north of the area of the Pueblos, with whom they were sometimes at war; but, my informant added, the two were originally the same people.

From physical examination it would appear that the tribe, notwithstanding some evident mixture, is closely allied to the ancient Pueblos and to the short-headed people of today in other parts of New Mexico and Arizona, and possibly in old Mexico.

¹ See Matthews, *Navaho Legends*.

THE HUDSON COLLECTION OF BASKETRY

By OTIS T. MASON

In August, 1899, the United States National Museum procured from Dr J. W. Hudson, of Ukiah, California, the best scientific collection of basketry known to the writer from any people on the earth. In this case the people were the Pomo and their subdivisions of the Kulanapan linguistic family, on Russian river, California. In the collection there are a few pieces from other tribes, but in this brief paper they will be disregarded and attention paid to the Pomo specimens alone. In every example the material has been carefully identified by the collector. The plants used are the following :

PLANTS

SCIENTIFIC NAME	PART USED	INDIAN NAME
<i>Carex mendocinensis</i>	Prepared root	Ka-hum
<i>Carex (?)</i>	Dyed root	Tsu-wish
<i>Salix stricklandii</i>	Prepared root	Shi-ko
<i>Salix bludiana</i>	Prepared stems	Bam
<i>Salix nigra</i>	Prepared inner bark	Ma-lo-ma-lo
<i>Pinus sabiniana</i>	Split root	Ka-li-she
<i>Pseudotsuga taxifolia</i>	Root	Ka-wa
<i>Pteris aquilina</i>	Prepared root	Bis
<i>Cercis occidentalis</i>	Bark side of shoots	Mu-le
<i>Corylus rostratus</i>	Stems	Pshu-ba
Grape	Vine	Bam-tu
<i>Linum californicum</i>	Prepared stems	Ma-sha

In the decoration of this basketry, mineral and animal substances are used, as follows :

MINERAL

SCIENTIFIC NAME	PART USED	INDIAN NAME
<i>Magnetite</i>	Burned, prepared cylinders	Po

ANIMAL

SCIENTIFIC NAME	PART USED	INDIAN NAME
<i>Saxidomus nuttallii</i>	Prepared shell	Ka-ya
<i>Cardium corbis</i>	Prepared shell	Ka-ya
<i>Haliotis</i>	Prepared shell	Tem
<i>Melanerpes californicivorus</i>	Throat and scalp feathers	Ka-tach
<i>Sturnella magna neglecta</i>	Breast feathers	Ju-shil
<i>Lophortyx californicus</i>	Crest	Chi-ka-ka
<i>Anas boschas</i>	Scalp feathers	Ka-yan
<i>Cyanura stelleri</i>	Neck feathers	Tsu-wa-lo
<i>Colaptes mexicanus</i>	Quill splittings	Ba-chi-a
<i>Aquila chrysaetos</i>	Tail and pinions	Shu-i
<i>Agelaius gubernator</i>	Elbow feathers	Tsu-li-a
<i>Icterus bullockii</i>	Neck and breast	Kai-yo-yo

Ka-hum is split into flat strings or splints and kept wet during the weaving; color, light tan. *Tsu-wish* is buried with ashes for about 80 hours, thus dyeing to shades of black. It is split into splints like *ka-hum*. *Shi-ko*, split into splints, also whole stems, and used for fish-weirs; color, cream. *Bam*: 1, Young shoots decorticated and polished for warp; color, straw; 2, Splittings from bark of young shoots; 3, Splittings of young shoots. *Ma-lo-ma-lo*, inner bark strips; color, dark tan. *Ka-li-she*, split root; color, buff. *Ka-wa*, split root, trimmed limbs; color, gray. *Bis*, chewed and cleansed root, split; color, black. *Mu-le*, bark side of shoots, split into tape; burnt sienna. *Pshu-ba*, trimmed stems. *Bam-tu*, vine used rough or decorticated. *Ma-sha*, crushed, hackled, or combed.

Ka-ya, manufactured from clam shells; current among natives as "Indian silver"; monetic base.

Po, mined in Lake county, California; heated dull red, then tempered in hot water; knapped and scoured into cylinders, then bored; current as "Indian gold"; monetic base.

All prepared vegetal substances turn dark with age and especially by the smoke from open fires in Indian huts. *Tsu-wish* ranks first in value; a bunch equals 100 *ka-ya*. A bunch of *ka-hum* equals 65 *ka-ya*; of *mu-le*, 20 *ka-ya*.

Dr Hudson¹ notes the two great types of weaving, to wit, I, the twined (*cha-ma*); II, the coiled (*shi-bu*). Each of these is further divided, as follows:

TWINED WEAVING (*Cha-ma*)²

In twined weaving there are a regular warp and woof, consequently the term "weaving" is correctly applied to it. The warp consists of a number of upright stems or cords, and the weft is generally a two-ply twine made of substances before mentioned. Sometimes, for strengthening or ornamentation, a three-ply braid or twine is used. In all examples of twined weaving the warp stems are enclosed in the turns of the twine, so that if the former were drawn out there would remain a coil of two-ply twine which could be straightened out from the upper edge to the middle of the bottom of the basket. The twined weaving in the Hudson collection is divided as follows:

1. *The Fish-weir Type (Pshu-kan)*.—In this type a number of upright warp-rods are held together by pairs of hazel or willow shoots passing around horizontally, as in a winding stairway, and making a half-twist in each space as in a wattle hedge or fence, enclosing also a horizontal stem as in the fine *ti* style. In the fish-weirs and coarser articles the rough material is used, but in household utensils the willow may be decorticated and even polished. The original material for articles of this kind was hazel (*shu-ba*).

2. *Pshu-tsin*.—This type is mentioned by Dr Hudson, but is not represented in his collection. It is used in granaries, sheathing for thatch, game fences, etc., but not in basketry.

3. *Bam-tush*.—A style of twined weaving called, in the Pomo language, *bam-tush*, from *bam-tu*, a grapevine, the original material; but this has been discarded for stronger and more polished

¹ A detailed description of basket weaving appeared in the *Overland Monthly* for June, 1893. In the August, 1897, issue of that magazine appeared an article on *wampam*.

² *U. S. National Museum Report*, 1884, pl. viii.

substances. In the splints used for this style of basketry, the brown bark and the pale yellow interior of the stem afford the basket-maker an opportunity for ornamentation. By the term *bam-tush* is evidently meant the plain twined weaving in which only one warp-stem is included in each half-turn of the weft.¹

4. *Shu-set*.—Among the Pomo the *shu-set* is the most highly decorated of this type of weaving. Upon the pieces marked as belonging to this type there are two styles of manipulation. In all cases, however, the twine stitch or mesh passes over two warp-strands instead of one, so that the ribbed appearance on the outside has a diagonal effect.² This method is always employed on Ute basketry and as far south as the Pueblo country. Upon the same pieces, however, the most elaborate figures are produced by a style of twining seen on the basketry of many tribes of Washington, especially on that of the Makah and the Wasko.³ One of the strands of the twine remains always on the inside of the Ute basket and outside on that of the Makah, while the wrapping is done entirely with the other strand, which is usually brown or black, in which case the pattern will show on the outside but not on the inside.

5. *Ti*.—This is the Pomo name for a style of twined weaving in which four elements are employed, namely, (a) a set of perpendicular warp-stems, usually of willow (*Salix hindsiana*); (b) a stem of the same material carried around, in the form of a coil, horizontally on the outside of the upright warp-stems; (c) a regular course of twined weaving, with two splints, which at each half-turn encloses the upright and horizontal warp-stem. This makes a very solid double basket for domestic purposes.⁴ On the outside the appearance is that of the *shu-set* basketry, but the ridges are diagonal; on the inside the appearance is that of the *bam-tush*

¹ U. S. National Museum Report, 1884, pl. xi.

² *Ibid.*, pl. xxi.

³ *Ibid.*, pls. xiii and xiv, b.

⁴ Shown in *Overland Monthly and Smithsonian Report*, 1886, 1, pl. xxii, fig. 55.

or plain twined weaving. Dr Hudson says that this is the most difficult and most highly prized of all the types of twined weaving.

In addition to these species of twined weaving obtained by Dr Hudson, the following are employed in bottoms or bands of ornamentation and occasionally in the structure of the basket:

(a) Three-ply twine, by which is meant the employment of three members or filaments instead of two in the twining. In the process of twisting, when the third of a turn is made, one of the filaments is caught over a warp-stem, at the next third another filament, and at the end of the whole turn the third is caught over, and so on, the process being repeated from round to round. A moment's thought will show that upon the outside two of the strands will always be shown, while on the inside there will be only one. The texture on the inside, therefore, will be that of plain twined weaving; but on the outside it will be diagonal, in which each of the stitches passes over two warp-stems and, under the circumstances, are imbricated or overlapping.¹

(b) Three-ply braid (*shi-tsin*), used on bottoms and resembling the last named, save that the filaments are plaited instead of twisted, but alternately they pass one at a time over warp-stems on the inside, and on the outside this is indistinguishable from *a*.

Before proceeding to the next of the two great divisions of basketry, attention is called to the fact that in the Pomo collection there are all types of twined weaving—the plain twine, the diagonal twine, the bird-cage twine as among the Makah (Pomo, *lit*), and the four-element twine last described. No other methods of twined weaving are known.

COILED WEAVING (*Shi-bu*)

Of the coiled method of structure there are the following types, three of which are mentioned by Dr Hudson:

Firstly, as in Siamese basketry, a single stem of rattan forms

¹ *Smithsonian Report*, 1886, 1, pl. xiii, fig. 55.

the foundation. The sewing is done with a split stem, and the stitches pass around two rods locking into the ones underneath.

Secondly, the foundation is a bundle of splints; stems of plants are split into thin pieces, a number of which are bunched together, and these form the foundation; the sewing passes around the bunch into the one below, so as to take up two or three, also locking into the stitches underneath. This method produces very coarse ware, abundantly exemplified in the Ute collection in the National Museum.

In the third variety a number of rods, usually three, form the foundation, the sewing passing around these into the upper one of the bundle underneath, the stitches interlocking. Specimens of this variety are found throughout the Southwest. Dr Fewkes has figured an example from a very ancient ruin in Arizona.¹ Slight variations in this particular type of coiling are produced by varying the size of the rods. In some examples a larger number are found, and in others one of considerable size is accompanied by a small one above, under which the stitches are locked.

Fourth, in the Hopi meal-tray, as well as in examples from both continents, a larger or smaller bundle of very fine, thread-like filaments makes the foundation. The coiling is done also with thin, fine filaments, so that the surface is variegated in shading and there is great variety in pattern. This last form is not represented in the Hudson collection.

The Pomo, according to Dr Hudson, name the third style *shi-lo*, in which a coil of fir-root fibers makes up the foundation, and these are bound together by a splint of the same material catching in the splints of the coil below, the stitches interlocking. This slovenly method, developed, as intimated above, by the Shoshonean tribes inland, is also ascribed to the Yuki Indians (Yukian stock), but Dr Hudson says that the Pomo long since discarded this method.²

¹ *Smithsonian Report*, 1896, pl. cxxiii.

² *U. S. National Museum Report*, 1884, pl. iv.

The first of the Pomo methods of coiling is called *tsai*, or *bam-cha*, "one rib." The foundation is a single willow shoot, seasoned and smoothed. The sewing is done with splints in such manner that the stitches pass round the current foundation stem and beneath that of the previous coil, the stitches interlocking.¹

In the Hudson collection, owing to the fineness of the natural material, light and elegant pieces are made and intricate figures ornament the surface. In one specimen, the finest perhaps in the world, there are 60 stitches to the linear inch. But the most delicate and versatile type of coiled weaving is called by Dr Hudson *bam-tsu-wu* (*tsu-ba* = three), the foundation of which consists, as above described, of three stems bound down by sewing which passes under the lacing and the upper stem of the coil below. This is regarded as the highest type of Pomo basketry. The materials are said to require the most careful tests of evenness, pliability, and color. It is to this type of sewing that feather-work is best adapted, and it is the opinion of Dr Hudson that it formed an incentive for adding this rich ornamentation.

The borders of many of the pieces are finished by a whipping of two sorts in which the stitches in one case are perpendicular to the foundation, and in the other oblique. Furthermore, a false braid appears on the border of many pieces, in which the effect is produced not by the plaiting of three splints, but by the peculiar administration of a single splint.

Upon the Pomo cradles the warp-stems are sewed together by a manipulation called *tsa-wam*, which on the inside of the cradle resembles two rows of twined weaving, but on the outside has the appearance of an intricate four-ply braid. This is done by means of a single filament, which passes in half-hitches over two warp-stems, backward above and below a central line, then, advancing one rod, makes the same double half-hitch backward over two, and so proceeds forward over one and backward over two until the circuit is finished.

¹ *Ibid.*, pl. xxiv.

ORNAMENTATION

The ornamentation on the Hudson basketry is all in the weaving; even the feather-work is caught into the stitches or meshes in coiling. There is no such embroidery or overlaying as in the Tlinkit and Klikitat ware. The patterns are (1) a line or more of technique like that of the body, only in another color; (2) a band of twining or coiling in another stitch; (3) bands of patterns resembling a strip of lace-work around the body; (4) geometric patterns repeated over and over; (5) spiral patterns rising from the bottom, widening over the bulge, and contracting at the rim; (6) overlaying of feather-work and shell-work. The most ambitious and truly marvelous variety is number 5, wherein several intricate designs, usually three, are woven. On many there is an axis of white, spotted here and there with little figures, and on each side of this axis or lane of white are symmetric accumulations of rhombs, rectangles, and triangles, finished out with figures of quail-crests and other conventional forms, the whole producing a design of great beauty and complexity.

According to Dr Hudson, all but one of the basket patterns, tattoo marks, inscriptions, pictographs (*ba-shi'*) refer to Pomo cosmogony and totemism. The *Ke'-a*, or Quail people, use a pattern resembling the quail's crest. The Pomo make a triangular pattern for a mound of red earth on Spencer's ranch, in Potter's valley; they also use a T-shape design for the buckeye tree (*di-sa-ka-lt'*), the fruit of which is a part of their dietary. The *Ka-tcha-ka* Pomo used an acute triangle or series of triangles superposed one on another to indicate arrowheads. So a number of rhomboids in zigzag form denote waves on the waters of Clear lake, and a band of rectangles, joined by means of a line of weaving, stands for a series of connected points.

In Memoriam

FRANK HAMILTON CUSHING

THE 305th meeting of the Anthropological Society of Washington was held as a memorial to Frank Hamilton Cushing, Vice-President of the Society, on Tuesday evening, April 24, 1900. President McGee opened the meeting with a brief tribute.

Remarks by W J McGee

On the day of our last meeting, April 10, 1900, the life and work of our late associate and Vice-president, Frank Hamilton Cushing, came to an end; and in response to wishes expressed by several of our members, this meeting of the Society is devoted to his memory.

Cushing was a man of genius. The history of the human world has been shaped by a few men; the multitudes have lived and worked and ended their days as woof-threads in the great pattern, while the warp has been carried forward through the generations and raised to ever higher and richer breadths by the relatively few leaders of action and thought; and such leaders are the geniuses of their successors if not of their associates. It is in this noble class that Cushing was placed by those who knew him best; he possessed that flame and shed that subtle light of genius that illumined whatsoe'er he touched, and guided his own feet as well as those of others in the way of progress. So he was a leader, not in physical force, not as a formal teacher, not even in the spontaneous election of his fellows, but in that clearness of insight into things for which all men strive under the stress of intuition. The world is better and wiser because of Cushing's life in it.

Most of the geniuses who have shaped the history of later

millenniums shone as intellectual luminaries alone: Cushing stood out not only as a man of intellect but, pre-eminently, as a master of those manual concepts to which he gave name as well as meaning—indeed, he might fittingly be styled a manual genius. There are two sides to man, two correlative and reciprocal aspects—the hand side and the brain side. Human development begins in the child, and began in our earliest ancestry so far as we are able to think, chiefly in the perfecting of the hand; for throughout the human world men *do* before they *know*—indeed, the greater part of knowing is always preceded by generations of doing. So humanity's dawn was doubtless brightened through manual genius; then came those later millenniums in which the brain side of man rose into dominance and illumined progress—and this was the time of intellectual geniuses. Of late science has arisen, and men have turned to the contemplation of nature and have been led thence to the conquest of natural forces; in the strife against dull nature, the manual side of man has again come into prominence, and the pages of later history are emblazoned with the names of inventors and experimentalists in whom the hand side and the brain side have attained perfect union. To this class of men Cushing belonged; yet the application of his genius was peculiar, even unique, in that his efforts were expended in interpreting inventions by others rather than in making inventions of his own. This application of his powers rendered him successful beyond parallel in retracing the paths pursued by primal men in their slow advance toward manual and mechanical skill; and it was through this peculiar application that Cushing's richest contributions to the Science of Man were made.

By reason of his peculiar insight into primitive devices and motives, Cushing was a teacher of his associates, even of those whose years were more than his own. His mind flashed and scintillated under the impact of new sights, new sounds, new thoughts; hence he was fertile in hypothesis, fruitful in suggestion, an avant-courier in research, an intuitive interpreter of

things. All his associates profited by his originality, and learned much of him; I learned more from Cushing than from any other investigator save one; and my debt to him is no greater than that of many other students.

We mourn today the untimely death of an honored and beloved associate, a man of genius whose place can never be filled.

Remarks by William H. Holmes

Our lamented friend and associate, Frank Hamilton Cushing, was born in the little village of Northeast, Erie County, Pennsylvania, July 22, 1857. At birth he was a mere mite of humanity, weighing only a pound and a half. For a year or two he grew but little, and was kept always on a pillow; but it is said that his mind developed more rapidly than his body—that in after years he could remember faces seen and aches felt before he was able to form words or to move from his place on the pillow.

When he finally got a start he was so tiny and weak that he found no place among the hardy and boisterous brothers and sister, and sought to avoid them and be alone. Even thus early the characteristics of his unusual personality began to take form. When he was three years of age the family moved to Barre Center, New York.

Cushing's initiation into the delights of archeological research took place when he was nine years of age.

When he was big enough to contrive and construct he built himself a miniature ship and mounted it on wheels, and one of his most memorable experiences with an unsympathetic environment was the emphatic displeasure of his parent who found him sailing his craft over the waving surface of a neighboring field of young wheat.

When he began to read, a new world opened to him. He found but few books in his father's house, aside from medical works, and one of his early recollections was that of building up a pyramid of boxes and other articles high enough to enable him

to remove the volumes from the shelves. Among the books he found a dictionary, which proved a great mine to him, and no doubt had marked influence upon his subsequent career. Every evening he consulted this book, seeking the new or difficult words that came up during the day, and these studies were often continued far into and even through the night. His schooling was rather meager, and by far the larger share of his education was obtained by reading and study along the few lines that offered themselves to the ambitious boy.

His physical weakness and distaste for the boisterous companionship of other children drove him more and more into solitude, and he found his keenest pleasure in the fields and woods. His imagination more than kept pace with his general development, and he invested his surroundings with extraordinary qualities and powers much as do the primitive tribes of which later he became a chief student. He made himself an Indian costume, and armed with improvised weapons wandered in the deep woods where he remained far into the night,—in fact until morning broke,—hiding his paraphernalia during the day that it might not fall into piratical hands. As he wandered he talked to the trees and rocks and to the moon, and was fascinated by the solemn mystery of the night. He fairly worshiped the forest trees, and, conceiving the idea of having one of these that he could call his own, bought one for a small price from his cousin—not a tree he could dig up and carry away, but a big tree in the woods where he could come and under its somber shade dream and talk and sing, and imitate the sounds of bird and beast at will. This was his trysting-place with Nature.

Then he took to carrying his beloved dictionary with him in these lonely wanderings, and he carried it always on his head down the roads and lanes and through the forests of beeches. He carried it thus so frequently and persistently that his body became straight as an arrowshaft and lithe as the young saplings, his brothers; and from this dictionary he preached his sermons

to his elder brothers, the trees. The child was so near Nature that he conversed with her without fear of misunderstanding, a relation not existing with any human creature.

Naturally this child was not well understood by the matter-of-fact people of Barre Center, and some suspected that possibly his converse with inanimate things meant some mental weakness, while others feared he might be possessed of uncanny powers. His imagination was vivid, and possibly at times fantastic, but there were many to keep his wanderings within bounds. At one time he conceived the notion that he might fly, and to aid in the flight constructed himself wings made of a light wooden frame covered with paper or cloth. He told me this twenty-five years ago, laughing gayly at the recollection. He conceived that in some way strong faith in his power to fly would help the rather shaky wings. He climbed to the barn loft, and, appearing at the wide doorway, adjusted the wing-fastenings, gave a few preliminary flaps, and boldly spread his pinions for flight; but the faith was not strong enough, and he came down with terrific force. Although no bones were broken, the flying habit was very thoroughly broken—but this, he added ruefully, did not deter his irate father from breaking it again.

A traveling lecturer came to the village and talked to the people about geology. The boy was thus initiated into a new field, and became a collector of geologic specimens as well as of Indian relics; and he now longed to wander into remoter regions. But travel was difficult without money, so he sought work, and by pulling beans for the neighbors accumulated enough to set out on his journeyings and adventures. His limit of expenditure was ten cents per day. He reached the shores of Oneida lake, and finally got hold of a clumsy boat heavy enough for four strong arms to manage; but the lad was not daunted, and without outfit or food began the navigation of the lake and the search of its shores for all kinds of specimens. Late one evening he was overtaken by a thunder-storm and his boat was driven upon the swampy shallows;

across these in the darkness he finally found his way to solid land and sought shelter. Drenched to the skin and weak from lack of food, he knocked at the door of a farmhouse. The frightened family refused to open the door, but when the good mother of the house got a glimpse of the wanderer through the blinds she cried, "Why, it 's only a little boy," and he was taken in and fed and put to bed. But he did not always fare so well, and from other places was chased by the dogs or turned away brutally as a lunatic or tramp. But he never gave up, and in spite of wrecks and rebuffs came home laden with valuable collections.

At about this period Cushing met George Kennan and visited him at his home in Medina. Kennan helped and encouraged him, and the boy worshipped Kennan in return.

Then he came to know Lewis H. Morgan and received new inspiration from his conversation and writings; and on one of his excursions he found another friend. Happening in the vicinity of a country residence he came upon a large boulder from which protruded a fine trilobite. Rushing to the house to seek a hammer, he encountered a man working in an outhouse. This person was the late Mr L. W. Ledyard, and in response to the boy's inquiry, he begged to know for what the hammer was to be used. When told that it was to break out a large trilobite from a rock near by, Mr Ledyard replied that the stone had been brought to the spot at the cost of much labor and that the trilobite was the particular attraction; "but," he added, "I will take you to the place from which this specimen came, and there you can gather trilobites to your heart's content." This was the beginning of a warm and helpful friendship to young Cushing.

At the age of eighteen Cushing found his way to Ithaca, and at Cornell University sought Prof. C. F. Hartt, geologist, and a well-known student of archeology. The Professor was in his workroom, stretched out upon a table suffering from an attack of malaria. The boy introduced himself, but was not especially welcomed, and when he broached the subject of Indian relics and the

search for them in the neighborhood, he was told brusquely that there were none, for Hartt and his students and the farmers about Ithaca had looked for them in vain. "But," replied Cushing, "there are Indian relics everywhere, and I can find them; I can find plenty of them right over there on that point of land." The Professor did not believe it, and suggested that the lad had the privilege of proving his assertion. So Cushing set out without delay and in a few hours returned with a sack full of implements. But by this time he was thoroughly exhausted from hard work and lack of food (for either he had no money with which to buy food or had forgotten to eat), and he climbed the hill to the college with great difficulty. Finally, reaching Hartt's place, he staggered in and began to empty the contents of the bag upon the floor. "Stop!" shouted the Professor, astonished at what he saw. "What are you doing? Take care of those things; bring them here to the table." He was not only surprised at the ample proofs brought so promptly, but when he looked again at the boy he was deeply impressed with his exhausted and pitiable appearance. "Here, Darby," he cried to his assistant, "take this chap and give him something to eat."

Thus Cushing made himself a place in this great center of learning and soon afterward returned to take a special course of study under the supervision of Professor Hartt.

Remarks by F. W. Powell

The father of Frank Hamilton Cushing was Thomas Cushing, a practicing physician and a man of learning, who gradually retired from the practice of medicine and devoted himself to the study of philosophy. While yet but a lad Frank Cushing began to make collections of stone implements and other prehistoric artifacts, which are abundant in the northwestern part of New York; and he made excursions far and wide along the shore of Lake Ontario and southward to the Finger lakes and westward to Lake Erie in pursuit of this study. He was known as a studious

boy, and in this he was greatly encouraged by his father, who perhaps did not fully sympathize with him in his study of archeology and who doubtless thought that his zeal in this respect was an idle sport. An intelligent neighbor, who was not quite so absorbed in metaphysic as Dr Cushing himself, became deeply interested in Mr Cushing. This gentleman, the late L. W. Ledyard, was an acquaintance and friend of Professor Baird, then Assistant Secretary of the Smithsonian Institution. Through his representation the Professor was induced to request young Cushing to write an account of something of interest which he had observed in the archeology of western New York. At this time he was but seventeen years of age, but he prepared a statement in a letter to Professor Baird which was published in the Report of the Smithsonian Institution for the year 1874. This letter foreshadows the genius which in subsequent years we have found Frank Hamilton Cushing to be. It shows that at this early age he was an acute observer and an apt reasoner. He knew how to observe significant facts and to compel them to tell their story.

The collections made by Cushing at this time had already become extensive, and his father finally became intolerant of their presence in the homestead, as they occupied so much room and were the source of much disorder. So our young man built for himself a wigwam on a retired part of the farm, which he made his museum and laboratory. Ultimately the collection came into the possession of the Smithsonian Institution. The wigwam and its surrounding structures were indeed a scientific workshop in which young Cushing laid the foundation of a system of investigation which has since proved of marvelous efficiency and which has been successfully developed by other laborers.

This new method of research in prehistoric archeology I shall call the method by experimental reproduction. At this early date Cushing began a series of trials to discover, if possible, the method by which the aboriginal inhabitants of this country had produced their artifacts. For this purpose he learned to chip

stone knives of materials which can be wrought in this manner, and to fashion other materials which must be wrought by battering and grinding. He soon became expert in making arrowheads and many other classes of stone implements out of the various materials which he found on his travels through the state. He also experimented on the making of pottery, on the weaving of baskets, and the making of utensils from birch-bark, and especially upon the construction of canoes from birch-bark and of logs through the agency of stone tools and fire, for he prided himself on reproducing the Indian arts by only such means as he supposed they were able to command.

It was by these experiments that he discovered the significance of the beaver teeth found so extensively in the village sites of the region. He found that a beaver tooth made an admirable carving tool. In later years he discovered many other carving tools, especially those of sharks' teeth found elsewhere in the United States. One of the remarkable discoveries made in this forest workshop was the method by which the Amerinds wove their rush mats. First he obtained a sample and then set his wits to work at the problem of its manufacture. The rushes which constitute the woof could not be handled in a shuttle, and the ordinary device of the hand-loom he supposed to be beyond the art of the Amerinds. Then he devised a new method of weaving such fabrics. He cut into lengths the warp which he desired to use, using ordinary twine for experimental purposes; then he made two stiff rods which he placed upon two sawhorses, so that they were parallel and about six inches apart. On this framework of rods he placed his strings of warp, one end over each pole, so that the middle portion of the string fell down to the ground, while the ends of the string turned over the poles. Then he attached to either end of the string a stone weight, and having a succession of warp-strings distributed at intervals along the poles, he placed several rushes upon the warp-string between the rods, then taking the ends of the strings with their weights

one in either hand, he crossed them, and then left them to again hang down over the rods. Having crossed all of the warp-strings in this manner, he again placed one or more rushes over the first bundle on the crossed string of the warp, and continued this process until the rush mat was completed. Prior to this time these warp-weights had been found widely distributed over the United States and were considered to be plummets or sinkers. You will find them still labeled in this manner in most collections. But Cushing was not sure that he had yet found the purpose of these so-called sinkers until in after years he found them used in this manner in the Far West. I have myself seen them used as warp-weights by the mat-makers of California.

It was in this workshop of technologic investigation that Cushing gained that marvelous skill in handicraft for which he became so well known among ethnologists, and which ultimately led to the preparation of his paper on *Manual Concepts: A Study of the Influence of Hand-usage on Culture-growth*.

At the age of eighteen he went to Cornell as a special student of natural science, continuing from time to time his local studies of village sites in New York. In 1876 he was given charge of a portion of the National Museum collection at the Centennial Exhibition at Philadelphia. In 1879 I called Mr Cushing into the service of the Bureau of Ethnology. Nine years before I had visited Zuni and the pueblos of the ancient province of Tusayan. There I had observed the marvelous savage and barbaric culture presented in the Pueblo region, and witnessed several of the ceremonies performed by its people. The memory of these strange sights haunted me, but I was never able to return to these investigations, and more than nine years passed before I could find some one else to enter upon the examination of this interesting subject. In 1879 Mr Cushing was employed in assisting Colonel Stevenson in making a collection of Pueblo artifacts, and this was continued in the subsequent year. I went myself with Colonel Stevenson and Mr Cushing into the field and took

occasion to have many conversations with the latter about the wonderful things which I had witnessed in 1870. I told him that I had long held it in view to have some one to investigate the subject. Through these conversations he became deeply interested in the sociology as well as in the mythology and religion of these people, and he finally concluded to stay at Zuni and see if it were not possible to be initiated into the mysteries of the life of the people. Many travelers had already seen the strange pueblos founded on rocks in the midst of the desert, and had learned all that could be learned without becoming a member of a tribe and learning its language. But Cushing decided that he would do everything necessary to make the intimate acquaintance of the people by learning their language, and, if possible, to gain admittance into the tribe and to become a member of one or more of their religious fraternities. So when we turned away from Zuni we left Frank Cushing among the people. He soon ingratiated himself into their good will and was adopted into one of their clans,—the Macaw,—and the sacred name "Medicine-flower," borne by only one person in a lifetime, was given him. Then he was initiated into one of their leading fraternities. From month to month and almost from week to week he rapidly gained in knowledge of the Zuni language, so that early the next year he wrote me that he had won a place in the esteem of the people and was confident that he could earn that promotion which seemed to him necessary in order that he might fully understand the nature of their government and especially the character of their religion. He found no difficulty in gaining knowledge of their mythology, but he found that they were very loath to reveal the secrets of their religion. At last success crowned his labors, for within a year he could speak the language, was the second chief of the tribe, and was promoted to a leading position in one of the most important of the fraternities—the Priesthood of the Bow. To accomplish this end it had been necessary for him to live with

the people. He lived in the family of the governor; he adopted the native costume, ate native food, never spoke a word of his mother tongue, but assiduously cultivated the speech of the people, until finally he took part in their councils and in their sacred ceremonies.

For five years Cushing led this life, returning to civilization but once, when he brought a party of Zuni natives east, visiting Boston and other large cities of the Atlantic coast. Everywhere he, with his party, was warmly received by the people, and the poor Zuni, who could not speak a word of English, were yet indoctrinated into the ways of civilization by those object lessons which Cushing was able to conduct for them. When he with his Indian chiefs returned to their home in the desert, Cushing's power over the Zuni was firmly established.

In looking back over the history of these times one cannot but admire the leadership which Cushing displayed. While as a student of ethnology he was engaged in learning the characteristics of Zuni religion, in recording their mythology, and in becoming deeply versed in their methods and principles of government, he at the same time led the Zuni to look with favor on the ways of civilization and laid the foundation for radical changes in their life, so that today all of these Pueblo peoples of Zuni and Tusayan are on the highroad to American civilization. They have become interested in modern agriculture, have practically abandoned many of their ancient customs, and are largely clothed as white men; they have consented to the establishment of schools in their midst, and are anxious for their children to learn English; but above all they are steadily abandoning their ancient religious ceremonies, and the new generation, with the gift of English speech, will soon accept the boon of Christianity.

These years in the desert, these years of life among savage men, these years of toil and privation, were busy years to Cushing, who pursued his ethnologic investigations with unflagging zeal. First, he gained a thorough knowledge of their language,

for he was deft in the acquisition of speech; at the same time he gained a thorough knowledge of the nature of the government of the Zuni, took part in it himself, and became an influential man in their councils. With his skill in handicraft he became an expert in all their labors, and there was nothing that a Zuni could make which he could not produce with greater skill. In the mythology of the people he became a pundit, and in their religious ceremonies he was more learned than the high-priest himself.

From 1886 to 1888 Mr Cushing organized and conducted archeologic research in the Salado and Gila valleys in Arizona, in charge of the Hemenway Southwestern Archeological Expedition, which was generously endowed by the late Mrs Mary Hemenway of Boston. In 1888 he made extensive excavations in the ruins of the "Seven Cities of Cibola" which had been discovered and identified by him seven years previously.

His health gave way, the privations of his life at Zuni had undermined his constitution, and he was compelled to return to the East for medical advice. After many vicissitudes and much suffering he finally consulted Dr Pepper, of Philadelphia, under whose treatment he partially recovered. Then Dr Pepper came to Washington for a consultation with me about the future course of life which Cushing should pursue. He recommended that he should go to Florida for a few months, at least, and perhaps for a year. Dr Pepper offered to raise the money to defray the expenses of an exploring expedition in the everglades and keys of the extreme southern portion of that peninsula. The expense of the expedition was borne in part by Dr Pepper himself, but chiefly by Mrs Phoebe Hearst. The discoveries made by Cushing on this expedition were of great interest and of profound importance in American archeology, and at his death he had nearly finished a voluminous report on his discoveries.

Cushing was a man of genius. He not only had the zeal for labor and the gift of untiring toil, but he had the genius for the interpretation of facts. In his association with men he was

always kindly and courteous; everywhere he made friends, and when he made one he could never again sever the bond. He loved his wife, who shared with him the dangers and privations of the wilderness. From the time that we first went together to Zuni until the day of his death he was my companion and friend, and I loved him as a father loves his son.

Remarks by Alice C. Fletcher

My acquaintance with Mr Cushing dates from the spring of 1882. He had come to Washington with some of his Zuni friends on his first return East from his ethnologic researches in the Southwest. I was also just from my studies in the homes of the Indians in the Missouri valley, having left them to plead before Congress the cause of a tribe that was threatened with the loss of its ancestral lands. Mr Cushing and I, all unknown to each other, had been doing our work in the same manner, both going to live with the natives, accepting the natural conditions and merging ourselves, as far as possible, with the people, that we might learn their social organization, customs, and religious rites. This similarity of method and experience could not fail to make our first meeting one of peculiar interest, and the acquaintance thus begun soon ripened into companionship and a friendship that, as the years passed, grew in strength and helpfulness.

Rereading some of Mr Cushing's papers printed during the last ten years, I have noted with delight that they preserve much of his personality and illustrate his peculiar wealth of mental imagery, so that the man whom we have known may yet be known to those who are to come after us.

The keynote of Mr Cushing's personality seems to have been an unconscious sympathy. It dominated his elastic step and erect carriage, as he came and went, never intruding, and always meeting one with a smile that started from the eyes and spread over the kindly face. It governed his speech and the choice of his language; it controlled his methods of research and was the

master key that unlocked so many secrets to his deft hands and keen vision. Hear his words, spoken in 1895, when making his address as Vice-president of the Section of Anthropology in the American Association for the Advancement of Science:

"Well-nigh all anthropology is personal history; even the things of past man were personal, like as ever they are to ourselves now. They must, therefore, be both treated and worked at, not solely according to ordinary methods of procedure or rules of logic, or to any given canons of learning, but in a profoundly personal mood and way. If I would study any old, lost art, let us say, I must make myself the artisan of it—must, by examining its products, learn both to see and to feel as much as may be the conditions under which they were produced and the needs they supplied or satisfied; then, rigidly adhering to those conditions and constrained by their resources alone, as ignorantly and anxiously strive with my own hands to reproduce, not to imitate, these things as ever strove primitive man to produce them. I have virtually the same hands he had, the same physique, generally or fundamentally the same activial and mental functions, that men had in ages gone by, no matter how remote. If, then, I dominate myself with their needs, surround myself with their material conditions, aim to do as they did, the chances are that I shall restore their acts and their arts, however lost or hidden; shall learn precisely as they learned, rediscovering what they discovered precisely as they discovered it. Thus may I reproduce an art in all its stages; see how it began, grew, developed into, and affected other arts and things—all because, under the circumstances I limit myself to the like of,—it became and grew and differentiated in other days."

His entrance into this method of training is told in his own picturesque way. He says:

"When I was a boy less than ten years of age, my father's man, while plowing one day, picked up and threw to me across the furrows a little blue flint arrowpoint, saying, 'The Indians made that; it is one of their arrowheads.' I took it up fearfully, wonderingly, in my hands. It was small, cold, shining, and sharp,—perfect in shape. Nothing had ever aroused my interest so much. That little arrowpoint decided the purpose and calling of my whole life. . . . I treasured that small arrow blade on the lid of an old blue chest in my little bedroom, until the cover of that chest was overfilled with others

like it. . . . When nearly fourteen years of age I discovered in the woods south of Medina, New York, an ancient Indian fort. I built a hut there, and used to go there and remain days at a time, digging for relics when the sun shone, and on rainy days and at night in the light of the camp fire, studying by experiment how the more curious [of the relics] had been made and used."

In these early experiences we see the lad led by his unconscious sympathy into an environment and adopting conditions that laid the foundation for his future triumphs in technologic skill.

The peculiar wealth of his mental imagery was germane to his personality. To him everything was alive; nothing was dead or incapable of responding to his vital touch. Like these spring days, when every twig and bough and buried root is sending forth in unmeasured profusion tokens of the life hidden within it, so, in the atmosphere of his mind, the crude ceremony, the archaic thought, the mnemonic symbol, each and all gave forth to him the secret meaning which through them was struggling for expression. His unconscious sympathy, his abounding mental vigor that pain and years of suffering could not quench, made him a master in reading the thoughts of the race he studied.

As an example of his divining power I will mention an incident of recent occurrence:

Mr Cushing had been studying the symbolic use of birds in connection with ceremonial objects among the Indians, both ancient and modern. A year or two ago I called his attention to the manner in which the woodpecker was treated on the sacred peace calumet: its upper mandral was turned back upon the crest. This aroused Mr Cushing's interest; we talked of it again and again when we met. At last he said, "I have been looking for the evidence of similar treatment, and I think I have found out the reason." Rising and walking rapidly, he stopped suddenly, and said: "I *know* why they turned the mandral back,—it was to prevent the crest from rising, to show that the bird could not be angry; he must serve the cause of peace."

Not long afterward an old priest (of a tribe unstudied by Mr Cushing), the keeper of a rite in which these peace calumets are used, gave me the ritual. In speaking of the woodpecker, he said, "The mandral is turned back upon the red crest of the bird that it may not rise; he cannot become angry,"—a singular confirmation of Mr Cushing's power of thinking his way along the lines of aboriginal thought.

To him the unseen was the real. He was busy, not with externals merely, "but rather," as he has said of his work, "as to how and why they became at all, . . . of the laws and principles which have governed man's development under all sorts of circumstances and in every age and land."

Remarks by Washington Matthews

Of the many remarkable achievements of Mr Cushing, there is none, perhaps, so remarkable and so fruitful in its results as his excavations in the Salado valley in Arizona—the work of the Hemenway Southwestern Archeological Expedition.

This work, begun in 1887, was the first systematic effort ever made to excavate the wonderful ruins of the Southwest within our borders. For over three hundred years the existence of such ruins had been known to civilized man. During the forty years of American occupancy which preceded Cushing's labors, ruins in Arizona and New Mexico had been often sketched, photographed, described, modeled, surveyed, and superficially examined; but no one had undertaken to dig into them.

A famous American archeologist said to me in 1880 that he did not consider excavation necessary to the study of Pueblo archeology. He has learned better since, and largely through the example of Mr Cushing. If such was the opinion of one of the high-priests of American archeology, can we blame the lesser lights and the uninitiated laity for their ignorance and indifference?

But there were some practical reasons why explorations in the

Southwest were long deferred: much of the land was held by hostile Indians who have been but recently subdued; and the country was difficult of access before the railroads were built. Money for the costly purposes of excavation was not to be procured; American scholars were interested in the Old World, and so, of course, were the wealthy patrons whom they influenced.

Slowly have our scientists come to discover how dense was their ignorance of things American. Mr Cushing has told me the following very characteristic tale of a Washington archeologist, now deceased:

When he heard that his young friend was going to Zuni to study the ethnology of its people, he said: "Mr Cushing, I understand you are going to Zuni. You will stay there perhaps a month, perhaps two or three months. While you are gone I will consult my authorities" (waving his hand grandly at his well-filled book-cases), "and when you come back, I will write a better book than yours." Thus we see that one of the foremost of our students of American antiquities believed that the crude work of the few hasty travelers who had visited Zuni contained all that could be known about its people, and that a few months would suffice Mr Cushing to learn all that he needed to know. He remained five years, learning something new every day to the last.

In studying the mythology and religion of the Zuni people, Mr Cushing felt that something was lacking. He found allusions to many things which the present life of Zuni could not explain. The nature of these problems, and the way in which our explorer believed he had solved them by means of excavation, have been explained by him in a paper read before the seventh session of the International Congress of Americanists at Berlin in 1888, and published in the *Compte Rendu* of the Congress. We have not time to give the details. Let it suffice here to say that he became convinced that by exploring ruins far to the southwest of Zuni he might find a key to the mysteries, and he determined to seek it there.

To the ordinary investigator this might seem the errand of a madman. The land southwest of Zuni is a vast wilderness filled with ruins and other ancient remains. The proverbial needle in the haystack might seem as easy to find as his key. But he was a man of rare intuition who beheld clearly what others saw only as "through a glass darkly." The intuition which guided him to his wonderful discoveries in Florida, from the contemplation of a single specimen brought from there, had, before this time, guided him to other discoveries.

But where should he obtain the money for his costly investigations? Here fortune and perhaps his own eloquent tongue assisted him, and a wealthy, patriotic lady of Boston, Mrs Mary Hemenway, came to his aid with abundant means, and he set out for the Southwest on his "wild-goose chase."

In February, 1887, he arrived with a party of assistants in the neighborhood of Tempe, in the valley of Salt river, or Río Salado, in Arizona. At first he worked in the uplands on some stone ruins of a kind widely distributed over the Southwest, without finding anything unusual or discovering the clues he sought. While thus discouragingly employed, he learned of a large earthen mound, some nine miles from Tempe on the bottom of Salt river, and he proceeded to dig here and in the vicinity. The structure, which was an irregular rectangle, rudely terraced, seemed an earthen mound such as was once common in Mississippi valley; but being excavated it was found to be the remains of a great clay building, of many stories, similar to the long-known Casa Grande, some 35 miles distant in the Gila valley. The flood-plain surrounding the mound, overgrown with mesquite trees and sagebrush, showed to the untrained eye no evidence of former habitation; but the eye of our explorer saw abundant evidence in the shape of potsherds and other products of human labor. He set his workmen to digging, and they soon exposed numerous foundations of earthen walls. The party camped beside this mound all summer and excavated until they

exposed the remains of an ancient city, some six miles in length and from half a mile to a mile in width. This place he named *Pueblo de los Muertos*, or, briefly, *Los Muertos*, the "Town of the Dead," from the great number of skeletons which he exhumed there. Subsequent excavations revealed many other cities as large as this or larger, and in all these there were skeletons; but he retained the name of *Los Muertos* for the first, and found other appropriate Spanish names for the remainder. Thus on his maps we find one ruined city named *Los Hornos*, "The Ovens," from the number and good preservation of the bread ovens found there; another called *Las Acequias*, from the number and good condition of the *acequias*, or artificial water channels, there seen; a third named *Los Guanacos* because in it he found many pottery images of an animal which he could not identify with any now inhabiting Arizona, but which he thought resembled some of the *Camellidæ* of South America—the vicuña, llama, or guanaco. I may here mention that he found in many houses collections of spherical stones which he thought might be the remains of bolas such as the South Americans use, and he found rock inscriptions which he thought might represent llamas and hunters casting the bolas.

There is not sufficient space to enter into many of the details of his great work; a few of his results only can be mentioned.

Besides the first great clay building or *casa grande*,—priest temple he called it,—the remains of many more of these stupendous buildings were found (in one city there were seven), and he found in these some mythic relations to the *estufas* or *kivas* of modern Zuni. The temples were made of mud, covering a core of wicker-work. They were, in fact, great mud-covered baskets.

He found another class of great buildings that were apparently used for public games and ceremonials, which he called sun-temples. Each, consisting of a single chamber, was elliptical in form, rounded on top, not so lofty as the priest temple but covering a greater area. One measured 150 feet in width by over

200 feet in length. It is thought to have resembled, when in use, an inverted, elongated unburned earthen bowl.

But perhaps the most notable work of the ancient Saladoans was their system of irrigation. The land of which we are speaking is a hot desert flood-plain surrounded by sterile, woodless mountains. No crops can be raised without abundance of irrigation, and as the ancient Saladoans lived almost exclusively on the products of their fields, they had to employ with great care the waters of Salt river. The *acequias madres*, or mother canals, were traced for a distance of over 150 miles, notwithstanding the drifting sands of centuries had done much to obliterate them. Their remains were found at distances of fifteen or twenty miles from the bed of the river from which they derived their water. They were deep and broad enough to be used for purposes of navigation. The great timbers brought from pine-clad mountains fifty or sixty miles away and used in constructing the temples were probably rafted to their destination on these canals. Crops were moved upon them. There are localities where the old beds are used today by the white settlers for wagon roads. In one place, near the present Mormon settlement of Mesa City, about ten miles from the ruins of *Los Muertos*, an ancient canal was dug through a hard rocky layer. The Mormon community made use of the prehistoric cut when constructing their own irrigating ditch. I have heard on good authority that the Mormons estimate the saving made by using this cut at twenty thousand dollars. It would be difficult to estimate the equivalent of this in human hands and days of labor, when the stone ax was man's best implement, when man was his own beast of burden, and when he had no better way of removing the débris than that of gathering it in his hands, loading it into a basket, and bearing it away on his shoulders.

Pottery, finely finished and elaborately decorated, was found in great abundance. Much of it was in perfect condition. Some had been buried with the dead; some had been used as funeral

urns to contain the ashes of the cremated. Some of the symbolic decorations resembled those of Zuni; others were similar to those of Peru.

The majority of the dead were cremated, their ashes being interred outside the dwellings. A few, supposed to belong to the priestly class, were buried without cremation and inside the houses. Their graves were found sometimes under the floors, where Zuni folklore had taught Mr Cushing to look for them; sometimes within the thick adobe walls; sometimes partly under the floor and partly within the wall. Children were often buried under the floors close to the fireplaces for mythic reasons which Mr Cushing explains. It is fortunate for science that all were not cremated.

On the 1st of September, 1887, I arrived in Mr Cushing's camp at *Los Muertos*, for the purpose of looking after his health, which was in bad condition, and to assist him, if necessary, in his work. After my arrival, the first objects which attracted my attention were, naturally, the skeletons. I found them scattered in fragments over the ground, in some cases reduced to dust. They had become very friable from their long interment, and on exposure to air and sunlight soon disintegrated. Besides, air and sunlight had good assistance from vandal visitors who used their boots most successfully to hasten destruction. No effort had been made to preserve the bones up to the time of my arrival. I procured all the paraffine I could buy in Phoenix and Tempe, and did my best, thereafter, to preserve the bones as they were unearthed. After my return to Washington, Dr Jacob L. Wortman, anatomist of the Army Medical Museum, went out to Mr Cushing's camp, well equipped with material for preserving the bones.

I had not been long studying these osseous remains when I became convinced that they were, in many respects, the most unique ever discovered. After they were brought to Washington, they were studied more thoroughly and described in volume VI of the *Proceedings of the National Academy of Sciences*.

Not the least result of the labors of Cushing and the munificence of Mrs. Hemenway has been to direct the attention of scholars and capitalists to our southwestern land as a fruitful field of exploration.

There was one great drawback to Mr. Cushing's usefulness. His life was too full of eager quest. He rarely rested long enough from his breathless race to tell his tale. "Give! Give!" was the ceaseless cry of the horse-leech's daughters in his heart. I know that much of the information gathered in Salado valley was never written; I know the same of his long investigations in the pueblo of Zúñi. He learned much under conditions which can never be repeated. He bore in his mind the lore of an irretrievable past. Other faithful laborers may follow on his trail—in truth, others have already followed him, yet they cannot recover much that he alone knew and that is now buried with him forever. In many things, his loss to science is irremediable, for

"Who shall lift that wand of magic power,
And the lost clue regain?
The unfinished window in Aladdin's tower
Unfinished must remain,"

Remarks by Stewart Culin

My acquaintance with Mr. Cushing dates from the spring of 1893, when I met him in Washington and soon after again in Chicago. We quickly became warm friends, finding many interests in common, and being more closely drawn together as the years went on. In Chicago he was engaged in setting up some groups of Zúñi figures at the Exposition; I in arranging my collection of games in the Anthropological building. He perceived the striking analogies existing between the Zúñi games with which he was acquainted and those from eastern Asia in my collection, and insisted upon making examples of the Indian objects for me that I might illustrate directly the curious parallels. The specimens which he then improvised remain among my most

interesting and valued souvenirs of this gifted man. With other exhibits at Chicago which particularly attracted Mr Cushing was one from the cliff dwellings of Mancos cañon, Colorado. He spent much time in studying this collection, and with his knowledge of the existing Pueblos and their traditions made many identifications of this prehistoric material which will prove to be of permanent scientific value.

In the seven years which have passed, Mr Cushing spent much time in Philadelphia. In the spring of 1895, while under Dr Pepper's care, he met Colonel Durnford and soon after started on that expedition to Florida which yielded such amazing results,—results which should give Mr Cushing lasting fame had he achieved naught beside.

It is my pleasure to bear testimony not only of Mr Cushing's services to the cause of science generally, but specifically to the institution with which I am connected. He interested and stimulated those upon whom we depend for financial support, and he left many substantial tokens of his life-work among the collections committed to my charge. Personally, I owe him an obligation not easily expressed in words.

Mr Cushing's chief ideal was perfected knowledge. He was consumed by a desire to know and to understand. He was forever questioning, and, while he despised no source of information, he ever sought his replies in direct personal experiment. Living in the world and of the world he was utterly disregarding of self. His spirit strayed full often. Even now I think of him, not as dead, but only reunited to that wild brotherhood to whom his heart went out.

Letter from Joseph D. McGuire

I find at the last moment that matters over which I have no control will make impossible my presence at the meeting of the Anthropological Society in memory of Mr Cushing, yet I trust

that a few words from me may be recorded as expressive of the loss sustained by Anthropology in Mr Cushing's death.

Principal Dawson, of Montreal, years ago wrote that in order to properly appreciate Stone-age conditions in Europe, one had a better field of studying primitive races and their manner of life in America than elsewhere. Study of primitive conditions almost conclusively demonstrates that throughout the world man resorted to similar methods to support life, and Cushing in his life at Zuni lived as an Indian and studied their life as one would a problem in mathematics. He sat in their councils and learned the traditions of their forefathers. He studied their mythology and familiarized himself with their tools and their uses. Their daily life for years was his own, consequently he was enabled to make clear the Indian method of thought.

During an acquaintance with Mr Cushing extending over a period closely approximating a quarter of a century, I never heard him say an unkind word of any one, but had a pleasant word for all, especially for those who were in any manner studying primitive conditions of the American Indians.

He was about the first who laid bare an aboriginal soapstone quarry where the natives made their cooking utensils. His descriptions of the methods of the manufacture of pottery and of metal-working would entitle him to rank among the greatest of the ethnologists of his period had he done nothing else. He was an expert stone-chipper, and he familiarized the world with certain methods of primitive peoples in stone-fracturing. Had longer life been spared him, doubtless much more would have been heard from him concerning it. Of his work in other fields of ethnology, others are more competent to speak than I.

The Washington school of Anthropology has certainly lost one of its brightest lights. In the going out of his life we have lost a man who was in many respects one of the most original minds among anthropologists; but it must be a comfort to his relations, as it certainly is to his friends, that before he was taken

away his name had been inscribed among those of the brilliant ones who have passed so many years in aiding in the diffusion of knowledge among mankind.

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BOOK REVIEWS

Ethnology. Translated from the German of Dr MICHAEL HABERLANDT by J. H. LOEWE. London: J. M. Dent & Co. [New York: The Macmillan Co.], 1900. 24°, 169 pp.

This pretty little volume is one of "The Temple Primers," intended to provide the average reader with an up-to-date summary on important topics. Such a scheme has the approval of all original investigators. It is most important that the work be well done and that economy of the reader's time be studied at every point. To this end the following advice is offered to the publishers: Do not print the same full-page illustration twice. Print the name of the illustration underneath it. Refer to the pictures in the text. In your bibliography of ethnology find at least one American authority later than E. G. Squier. If the Primers are all to be written on the other side of the Atlantic for American readers, employ an American editor. O. T. MASON.

Primitive Love and Love Stories. By HENRY T. FINCK. New York: Charles Scribner's Sons, 1900. 8°, 851 pp.

The task which Mr Finck has set for himself in this most interesting work, is to demonstrate that human love is subject to the laws of evolution; that it is not, as has generally been supposed, a sentiment that has always existed as we find it today. He holds that romantic love is an evolutionary product, belonging exclusively to the higher stages of modern sociological conditions; that it did not form a part of the nature of the human race during the days of the world's primitive civilizations, and that it is today still unknown and incapable of existence in states of savagery, barbarism, and semi-civilization.

The literature of the world abounds in love stories, but this is perhaps the first attempt to tell the story of Love: the first endeavor to subject this phase of human life to the laws of development, and to trace its growth from a simple physiological appetite to a highly differentiated psychical emotion.

This story of human love as unfolded by Mr Finck is a story for the general reader as well as for the scientist and student; and while it may appear to some as more imaginative than real, it cannot fail to

excite the interest of even the most sceptical; for not only is it rich in illustration through abundant recital of the love-lore and customs of primitive peoples, but it possesses the rare charm of being well told.

According to the analysis of the author there are fourteen essential ingredients of that very composite mental state which we call romantic love. They are individual preference, monopolism, coyness, jealousy, mixed moods of hope and despair, hyperbole, adoration, purity, pride, personal beauty, gallantry, self-sacrifice, sympathy, and affection. To prove that these characteristic elements are lacking in the primitive love sentiment, he brings to bear a truly remarkable array of ethnological facts, representing many years of careful and laborious research. These facts, which in the main will be readily admitted by all students of anthropology, are not only of interest in themselves and as evidence in support of the author's contention, but a special interest attaches to many of them in view of the interpretation placed upon them by Mr Finck in opposition to the explanations offered by Darwin, Westermarck, and other reputed authorities.

In the light of the evidence presented he very clearly and very forcibly demonstrates that romantic love as we know it today played no part in the love romances of the Greeks, Romans, Arabians, Persians, Hebrews, and other early nations of the world, notwithstanding popular opinion to the contrary. He shows, furthermore, the fallacy of the assumption that any of the elements of romantic love are capable of expression among savage or barbarous tribes; that love with them is a purely sensual or selfish sentiment, prompted solely by desire or mercenary motives, and utterly lacking in the altruistic and psychic qualities that characterize the present development of sexual attraction.

Not the least interesting and instructive feature of this unique work is the author's very convincing demonstration that ethical and moral sentiments are not inborn, but, on the contrary, are acquired as the result of sociologic conditions. He very clearly shows, by the evidence of customs in vogue among primitive peoples of the present time, that our notions regarding murder, incest, chastity, modesty, monogamy, etc., are by no means inspired by any moral sentiment inherent in the human race.

It is upon this ground that he bases his argument for the evolution of love, affirming that in common with modesty, chastity, and other ethnic features of modern civilization, romantic love has grown up slowly, subject to the laws of development, into its present exalted form.

CLIFFORD HOWARD.

Overtro og Trolddom. ALFR. LEHMANN. Kjöbenhavn: 1893-94. 8°, pp. vi, 166, 191, 173, 390, xiii. Aberglaube und Zauberei. [Stuttgart: F. Enke, 1898.]

Professor Lehmann's book, now rendered easily accessible to foreign students, performs a threefold service to the world of science. It contains a wonderfully complete and scholarly history of superstition and magic; it affords to psychologists a study in primitive, ancient, and modern mental processes; and it deserves the gratitude of the anthropologist and the sociologist in that it sheds the light of a sensible psychology on some of the less-understood sides of early and modern superstition and religion. The volume warrants translation into English. Only a few of its many suggestive facts and conclusions can be stated here.

Superstitions are the aberrations of man's mind in the field of religion and science. Superstition is a relative term; the lines of its definition are vanishing ones, for all depends upon the standpoint of judgment. Superstition is science until it is superseded or disproved repeatedly and emphatically. Keppler demolished the science of astrology, which thereupon sunk to the position of a groundless superstition. Superstition is, in fine, that which comes into strife with our own religious or scientific conceptions of the real and true; "every general idea is superstitious which either has no foundation in a certain religion, or is in strife with the scientific conception of nature of a given time." As for magic, "superstition is the theory; magic the practice."

These definitions indicate the scope of the work, which treats of shamanism, demonology, methods of divining the future, ordeals, witch-processes, etc., together with the pseudo-sciences, such as astrology, alchemy, spiritualism, and theosophy.

Historically, much of European superstition and magic originated in the East. There were two chief streams of Oriental influence—one flowing immediately from Chaldea, succeeding the conquests of Alexander the Great, the other derived less directly from the same country through the medium of Jews, Egyptians, and Arabs, and arriving in southern Europe with the Moors.

Professor Lehmann's historical treatment of the subject is remarkably complete; the instances are well selected and the arrangement all that could be asked. We find that the Chaldean ideas and practices, which are described in detail, moved steadily westward, taking on a character peculiar to the nations within which they were transplanted. Indigenous contributions to the borrowed product are found to have been almost negligible. The greater part of these superstitions passed over into the Middle Ages and were adopted, with characteristic modification of details, into the mediæval church.

To this point the southern stream also converges, bringing Hebrew cabalistic methods, the search for the philosopher's stone, and the reading of the stars. As usual with the ignorant, the more advanced science was taken to be sorcery; persecution of the Jews and savage witch-processes alternated with complacent, metaphysical reasonings on questions which were either imaginary or for which a solution could not possibly be found. After these empty dogmatists came the pioneers of the modern world, Paracelsus, Roger Bacon, and their fellows, soon to be succeeded by Galileo, Keppler, and Huygens, in the light of whose discoveries the quondam sciences were shown to be mere superstition.

In the third part of the treatise we are introduced to the modern forms of superstition and magic—spiritualism, "psychic force," alleged power over the "fourth dimension," theosophy, and fakirism. Recalling the definition of superstition with which Professor Lehmann begins his work, it is clear that the fact of his treating these subjects at all is evidence of his conviction that they are unable to endure the tests of modern scientific norms; his own investigations have aided in bringing out some of their charlatanism. The full history of Swedenborg, Andrew Jackson Davis, and Madame Blavatsky is given, as well as the results of experiments and observations made by the author and other psychologists of note.

It is in the fourth part of this work, however, that theories and views are presented which are new to anthropology, at least in the matter of their apt and systematic application to phenomena in the life of the uncivilized and of the ancients.

In short, the author, after explaining the nature of sleep, dreams, somnambulism, ecstasy, hysteria, and hypnosis, proceeds to apply such psychic conclusions in an explanation of religion and sorcery. He discusses normal and abnormal inexactitude in the processes of observation, memory, and association of ideas; the effect on judgment of prejudice, mental strain, fear, and terror; and the results of practice and habit. Experimental demonstration is appended in most cases. Applying conclusions to the history of superstition, many of the fabulous monsters, stellar portents, cases of "supernatural" healing, dream-prophecies, and omens in general yield a reasonable explanation. Synchronous, involuntary, and automatic movements are found to produce the table-moving of the modern spiritualists; many of their feats are merely skillful imposture, effected by manual dexterity.

Sleep, dreams, somnambulism, hallucinations (normal and abnormal), epilepsy, hysteria, and hypnotic suggestion have had, the author

thinks, an immense influence upon the superstition of all times. Hysteria and hypnosis are shown to be closely related in nature, while autohypnosis, with self-suggestion, is found to be induced by the use of certain narcotics, or by the fixing of attention ("contemplation") upon some object such as water, a crystal, a shining ball, a part of the body, or the like. Prophets, from the Siberian shaman to the Delphic Pythia, have, by intoxication, brought themselves into autohypnotic trances and ecstasies. Nervous persons make the best "mediums," and, naturally enough, women far surpass men in this field. Swedenborg and Davis were nervous wrecks. Moreover, the power to act as mediums is sometimes lodged in a special people; for instance, the Etruscans and Finns, whose magic besides bears strong resemblance to that of the Chaldeans.

Application of these psychic theories is successfully and convincingly made to many prehistoric and historic cases. Lehmann's work seems to have made a decided contribution to anthropological data and theory.

ALBERT G. KELLER

Archaeological Report, 1899. Being part of Appendix to the Report of the Minister of Education, Ontario. Toronto: 1900. iv, 199 pp., illustrations.

The Reports of this series are always welcome as they contain new material in regard to the archeology of Canada. In addition to the report by the archeologist, Mr David Boyle, this volume includes the following papers: New sites in (North) Victoria county, by G. E. Laidlaw; Notes on sites of Huron villages in Simcoe county, by Andrew F. Hunter; Description of village, by Samuel D. Frazer; Indian village sites in the counties of Oxford and Waterloo, by W. J. Wintenberg; The Wyandots, by William E. Connelley; The war of the Iroquois, by Benjamin Sulte; Notes on some Mexican relics, by Mrs Wm. Stuart; Pagan dance songs of the Iroquois, by Alex. T. Cringan; and A study of the word *Toronto*, by Gen. John S. Clark; also an obituary notice of Dr Brinton.

Mr Boyle's report, after mentioning the additions to the Museum, adds some notes on clay and stone pipes, bone articles, some curiously marked phalangeal bones, a rattlesnake gorget, Huron crania, an Iroquois medicine-man's mask, the "Macassa," an article of "vegetal character" carved by a white person; and on the remains on Pelee island. There are also brief remarks on the Big Corn feast (Lower Cayuga), naming a child, the peach-stone game, the wake game, the invitation stick, and Turtle clan names.

The finding of a specimen of the "rattlesnake shell gorget" so far

north is certainly interesting. It was doubtless obtained in the south, probably by some Iroquois-warrior, and carried north.

Many of the problems to be solved by the Canadian ethnologists and archeologists are exceedingly complicated, for the rapid changes of the positions of tribes in post-Columbian times have doubtless caused such an intermingling of pre-Columbian and post-Columbian specimens as seemingly to baffle attempts to separate them. As it is only by the accumulation of data that this separation can, if ever, be accomplished, it is hoped by other workers in the same field that all possible encouragement will be given to the investigations being conducted under the auspices of the Minister of Education. We judge also that it is very desirable to extend the investigations a little farther toward the north-west.

CYRUS THOMAS.

PERIODICAL LITERATURE

GENERAL

Baumann (Oskar.) Gottesurtheile bei den Swahili. (*Globus*, Braunschw., 1900, LXXVI, 371-373.) Description of various forms of oracles and the effect of auto suggestions upon their results.—F. B.

Bloch (A.) Discussion sur la platysémie. (*Bull. Soc. d'Anthr.*, Paris, 1900, iv^e série, X, 447-449.) A contention that *platysémie* is not the result of a specific local cause, such as muscular development adjacent to the tibia, but a variation due to influences affecting the whole body.—A. L. K.

Bollinger. Ueber Säuglings-Sterblichkeit und die erbliche funktionelle Atrophie der menschlichen Milchdrüse. (*Mith. d. Anthr. Ges.* in Wien, 1900, XXX [51-55].) The author finds that failure to nurse infants injures both mother and child.—A. L. K.

Bumüller (J.) Menschen und Affen Femur. (*Mith. d. Anthr. Ges.* in Wien, 1900, XXX [91-94].) From a study of the femur, the author comes to the conclusion that *pithecanthropus erectus* is a species of *Hylabates*, or at most a new genus of the *Hylabatidae*.—A. L. K.

Buschan (C.) Die Notwendigkeit von Lehrstühlen für eine "Lehre vom Menschen" auf deutschen Hochschulen. (*Centralblatt f. Anthr., Ethn., u. Urg.*, Jena, 1900, v, 65-72.) Calls attention to discrepancies and illogical proportions between various subjects of research at German universities, and demands the extension of anthropologic study.—A. L. K.

Edwards (Charles L.) Animal myths and their origin. (*Jour. Am. Folk-Lore*, Boston, 1900, XIII, 33-42.) Address delivered at the eleventh annual meeting of the American Folk-Lore Society. Believes in both independent origin and borrowing doctrines and that at the base of these is a common

human ancestry and an evolution of the myths concomitantly with that of the mind and the body of man.—H. J. S.

Folli (Ricardo.) Ricerche sulla morfologia della cavità glenoidea nelle razze umane. (*Arch. per l'antrop. e la ethnol.*, Firenze, 1899-1900, XXIX, fasc. II, pp. 161-202.) This article is also a doctor's thesis. The effects of alimentation, sexual differences, differences due to age, racial differences, variation, asymmetry, and abnormality were the subjects of the author's investigations which dealt with 877 skulls of various races (European 448, New Britain 105, etc., including 19 "South American Indians" from the Pampas, and 18 Fergians). The conclusions arrived at are: With peoples largely frugivorous, like the Hindus (41 skulls), the glenoid fossa is deeper than with peoples eminently carnivorous, like the Pampas Indians, or omnivorous, like Europeans; and with carnivorous peoples this fossa is more developed antero-posteriorly than with frugivorous peoples. Appreciable sexual differences do not exist. The characteristic, ellipsoidal, deep form of the cavity marks the period of youth and continues till old age—in infancy and childhood the form is somewhat roundish, and less deep, which features also tend to reappear in old age, when it is also a little less developed antero-posteriorly. With respect to race the chief points noted are that the Mongoloids approach the child in the roundish form of the fossa, and that the depth of the cavity decreases gradually from the higher races to the lower. Out of some 2,700 skulls, which Dr. Folli passed in review as to the absence of the glenoid fossa, such absence was shown in 31 (white race 10 per 1000, yellow race, 8 per 1000, black race 20 per 1000, of which 22 were males, 6 females, and 3 uncertain). The general average of absence is about 11 per 1000, which is a lower percentage than that of Gasfrida-Ruggieri for lunatics.—13 per 1000.—A. F. C.

Helm. Ueber die Bedeutung der chemischen Analyse bei vorgeschichtlichen Untersuchungen. (Mith. d. Anthr. Ges. in Wien, 1900, xxx [30-34].) Shows the value of chemical analysis as an aid to archeology, especially in the case of objects of metal and amber.—A. L. K.

Höfer (M.) Medizinischer Dämonismus. (Centralblatt f. Anthr., Ethn., u. Urg., Jena, 1900, v. 1-8.) Finds the origin of all primitive and popular belief in demons or spirits as causing and influencing physiological actions, in the experience of nightmare.—A. L. K.

Karutz (Dr.) Ein Beitrag zur Anthropologie des Ohres. (Archiv f. Anthropologie, Braunsch., 1900, xxvi, 733-746.) Development of the anthropological bearings of a long paper by the author on the form of the external ear published in 1897 in *Zeitschrift für Ohrenheilkunde*. Reports from different sources are collected and discussed, and a plea is made for the recognition of the form and size of the ear as a distinguishing characteristic.—L. F.

Karutz. Der Stand der Bogen und Pfeilforschung. (Globus, Braunsch., 1900, lxxvi, 380-389.) A review of investigations referring to forms and distribution of bows and arrows, particularly in reference to O. T. Mason, F. von Luschan, F. Ratzel, E. S. Morse, and Weule.—F. B.

Klaatsch (Hermann.) Die Stellung des Menschen in der Reihe der Säugethiere. (Globus, Braunsch., 1900, lxxvi, 329-339, 354-357.) The primates are one of the oldest forms of mammals. Man has branched off from the generalized forms of primates at a very early time, and for this reason his affiliations are not primarily with the anthropoids, but with more generalized types of primates.—F. B.

— Die Stellung des Menschen in der Primatenreihe, und der Modus seiner Hervorhebung aus einer niederen Form. (Mith. d. Anthr. Ges. in Wien, 1900, xxx [85-91].) The author finds man to be a primitive primate, and the primate a primitive form of mammal. The species man is as old as the separation of the mammals into their main divisions; and the chief races of man

cannot be much more recent. A cessation of natural selection was necessary for the origin of man.—A. L. K.

Laborde, Manouvrier, Papillault, et Gellé. Étude psycho-physiologique, médico-légale et anatomique sur Vacher. (Bull. Soc. d'Anthr., Paris, 1900, iv^e série x, 453-495.) An extended study of an executed degenerate. The authors declare him to have been irresponsible, and demand wider legal consideration of such a condition. The cranium and the brain showed no anomalies.—A. L. K.

Letourneau (Ch.) La vie de conscience chez l'homme. (Rev. de l'École d'Anthr., Paris, 1900, x, 1-16.) The author defines the various forms of consciousness from sensation to a sense of morality, in terms of molecular modifications of nerve cells and similar simple facts with which he is well acquainted. He finds ready amusement in polemics against "metaphysical illusions" and the "scholastic spirit." He states that the theory of hereditary persistence of acquired functions and characters is a fact, and from it derives civilization.—A. L. K.

Mochi (A.) L'indice encefalo-rachidiano. (Arch. per l'Antrop. e la etnol., Firenze, 1899-1900, xxxix, fasc. ii, pp. 107-100.) This is the doctor's thesis in natural sciences of the author, who is assistant to Prof. P. Mantegazza in Florence. After a brief historical *aperçu* of the literature of the subject, Dr Mochi treats of technique, experiment, and theory. The author's material consisted of 686 skulls (males 428, females 258), of which 211 were Italian, the rest from divers races, including 16 Fuegians, 26 Pampas and Patagonian Indians, and 54 ancient Peruvians. For the cranial capacity Dr Mochi uses Broca's method, and for the area of the occipital foramen a modified planimeter. Dr Mochi concludes that the index in question, "representing the volumetric between the medulla and the encephalon, and indicating the development of the higher nervous centers with respect to that of the rest of the cerebro-spinal nervous system," is "a good criterion of the degree of psychic evolution," and in the case of man "agrees with what is commonly admitted concerning the psychic hierarchy of the races and sexes." The article is furnished with detailed tables.—A. F. C.

Müller (H. C.) Die Gründung einer Zeitschrift für allgemeine Sprachwissenschaft. (Verh. d. Berl. Ges. f. Anthr., 1899, XXXI, 497-506.) A plea for the establishment of a periodical devoted to universal philology and the science of language. No action was taken by the society.—A. L. K.

Papillault (G.) Mode de croissance chez un géant. (Bull. Soc. d'Anthr., Paris, 1900, IV^e série, X, 446-447.) Measurement and detailed examination of a giant, whose abnormal growth, chiefly in the extremities, took place from the age of 18 to 37. A general infantile character was marked.—A. L. K.

Regnault (F.) Morphogénie osseuse expliquée par la pathologie. (Bull. Soc. d'Anthr., Paris, 1900, IV^e série, X, 411-426.)

Schrader (F.) L'homme devant les grands phénomènes terrestres. (Rev. de l'École d'Anthr., Paris, 1900, X, 117-125.) Generalities concerning the influence on man of his environment, "the scientific truth that we are an integral part of nature," and other recent discoveries.—A. L. K.

Thullié (H.) Les primitifs et l'âme. (Rev. de l'École d'Anthr., Paris, 1900, X, 126-135.) Finds that ignorance, terror of death, dreams, etc., are the sources of the belief in immortality; the idea of immortality then gave the idea of a soul; from this arose animism,—a stage in the development of mysticism.—A. L. K.

Virchow (R.) Meinungen und that-sachen in der Anthropologie. (Mith. d. Anthr. Ges. in Wien, 1900, XXX [14-17].) A brief address devoted to caution against confusing demonstrable facts and personal opinions. In regard to the debated question of the permanence of types, the writer takes an undetermined position. He recognizes the value that archeology has been to somatology in this question and others; but thinks an absorption of anthropology by archeology impossible.—A. L. K.

Wake (C. Standland.) The word for man and child in different languages. (Am. Antiquarian, Chicago, 1900, XXII, 53-55.) A list of these words in African, Indian Archipelago, Poly-

nesian, Australasian, Asiatic, and American languages. Suggests that these may lead to thought of possible affinity between Polynesian, Asiatic, and American languages. Data insufficient to prove affinity.—H. I. S.

Waldeyer. Universitäten und anthropologischer Unterricht. (Mith. d. Anthr. Ges. in Wien, 1900, XXX [4-9].) A résumé of the instruction in anthropology at present given in universities throughout the world.—A. L. K.

UNITED STATES AND CANADA

Backus (Emma M.) Folk-tales from Georgia. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 19-32.) Author believes men tell the tales to one another much more than do the women. Ten tales, regarding Brer Rabbit, Wolf, Frog, Siacoon; How Mooly Cow has no horns; Pine Tree and Oak Tree fall out, and How little boy went to heaven.—H. I. S.

Chapman (N. A.) Orientation among the mounds. (Am. Antiquarian, Chicago, 1900, XXII, 41-44.) A report of reconnaissance of earthworks in Green-up county, Ky.—H. I. S.

Deans (James.) "Hidery" prayers. (Am. Antiquarian, Chicago, 1900, XXII, 31-32.) States that the Haida pray. Gives examples.—H. I. S.

Friederici. Der Indianerhund von Nordamerika. (Globus, Braunschweig, 1900, LXXVI, 361-365.) A description of the races and uses of the dog in North America, with very full use of the extensive ethnological literature, but no discussion of anatomical characterization.—F. B.

Ivey (Harry J.) Morgan Hill (Pa.) mounds. (Popular Science, N. Y., Feb., 1900, p. 32.) A description of five small mounds of unknown origin.—H. I. S.

Jenkins (C. Francis.) The Moki bread. (Popular Science, N. Y., Jan., 1900, p. 6.) Two illustrations and a popular account.—H. I. S.

Mooney (James) The Cherokee river cult. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 1-10.) Purification in the running stream is a part of the tribal function. The river speaks, but only

Mooney—Continued.

the priest understands. Its aid is invoked with prayer and fasting on every important occasion of life, from the birth of the infant, in health and sickness, in war and love, in hunting and fishing, to ward off evil spells, and to win success in friendly rivalries.—H. I. S.

Neef (S. A.) Die Passionisten des Südwestens von Nordamerika. (Globus, Braunsch., 1900, LXXVII, 24-28.) A description of the "Penitents" of New Mexico, with illustrations.—F. B.

Peet (Stephen D.) The Great Plateau and its inhabitants. (Am. Antiquarian, Chicago, 1900, XXII, 1-16.) An illustrated description of the plateau drawn largely from the report of C. E. Dutton in second Ann. Rep. U. S. Geol. Survey. The problems are stated.—H. I. S.

Russell (Frank.) Athabaskan myths. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 11-18.) Little Hairy Man, The Raven, and the Wolf and the Wolverine, told by a Leichenz woman at McPherson, the northernmost Hudson Bay trading-post, and The Great Beaver, Origin of the Pine, and Why the Wolverine became a thief, told by a Slavey at Simpson.

Wilson (Ida.) Civilization of the Indians. (Am. Antiquarian, Chicago, 1900, XXII, 25-31.) Believes in educating Indians.—H. I. S.

MEXICO AND CENTRAL AMERICA

Gatschet (Albert S.) Central-Amerikas Sprachstämme und Dialekte. (Globus, Braunsch., 1900, LXXVII, 81-84, 87-92.) A comprehensive and very useful review of the present status of our knowledge of the distribution of linguistic stocks and languages in Central America.—F. B.

Sapper (Karl.) Ein Besuch bei den Gnatusos in Costarica. (Globus, Braunsch., 1900, LXXVI, 348-353.) Description of their communal houses with unequal, slanting roofs, hammocks, large pots for cooking, sieves, metates. The dead are buried in the houses. Food and firedrill are buried with them. Only those who die from the sting of a venomous snake are buried outside the house. Their widows

are not permitted to re-marry. Bows and arrows, and machetes made of heavy wood are still in use. The ancient style of clothing is a breech-clout of bark cloth for the men, a larger piece of bark cloth wound around the waist for the women. They oil their bodies and wear necklaces of tiger teeth. On account of the great number of men, they are polyandrous. They practice the *couvade*. The shades of the deceased are believed to enter the body of the deer, which for this reason is not hunted. A specimen of their songs is given. A rock sculpture in the territory of the Guatuso seems to differ in type from other Central American monuments.—F. B.

— Ein Besuch bei den Chirripó- und Talamanca-Indianern von Costa Rica. (Globus, Braunsch., 1900, LXXVII, 1-8, 28-31.) Description of a journey through Costa Rica. The Indians visited by Sapper still use bows and arrows, which are described in some detail. The Estrella Indians use small bows and blunt arrows to drive dogs and pigs out of their houses. These tribes live in round communal houses. They subsist mainly on banana. Corn is little used; tortillas are unknown. Fishing is done by means of bows and arrows. Bark cloth was formerly used for clothing, while nowadays it serves only for bed-covers. Hammocks are not used for sleeping, only for taking a rest during the daytime. The dead are placed on scaffolds near the houses, and after decomposition the bones are smoked over the fire of the house and deposited in sacred places, the whereabouts of which are held secret. They use drums and flutes made from shells. A few tunes are given. A number of very interesting illustrations accompany this paper.—F. B.

ASIA

Belck (W.) Aus den Berichten der armenischen Expedition von Waldemar Belck. (Zeitschrift für Ethn., Berlin, 1899, XXXI, 236-275.) Letters from the explorer reporting on the progress and results of his expedition.—A. L. K.

Braunhofer (H.) Die Ankunft der Samarkit-Arier aus Armenien und Medien. (Verh. d. Berl. Ges. f. Anth., 1899, XXXI, 475-483.) A sketch of an argument in favor of the view indicated by the title.—A. L. K.

Chevalier (H.) Les coiffures Coréennes. (Int. Arch. f. Ethnog., Leiden, 1899, XII, 225.) An account, with colored illustrations, of the various kinds of (national) Korean head-wear, with their uses and distinctions. The variety is very great.—A. L. K.

Francke (H.) Lüdäker mythologische Volksagen. (Globus, Braunsch., 1900, LXXVI, 313-315.) The Bou religion of Tibet is little known. The author has collected a number of folktales which he interprets as seasonal myths and which he believes to be of common origin with Aryan myths.—F. B.

Martin (R.) Die Ureinwohner der malayischen Halbinsel. (Mitth. d. Anthr. Ges. in Wien, 1900, XXX [59-61].) A consideration of the physical characters of the aborigines of the Malay peninsula, especially the Senoi or Sakai. The descriptions are based on measurements, which, however, are not given in detail. The average stature is very low.—A. L. K.

Melnikow (N.) Die Burjäten des Irkutskischen Gouvernements. (Verh. d. Berl. Ges. f. Anth., 1899, XXXI, 439-448; also Int. Arch. f. Ethnog., Leiden, 1899, XII, 193.) A consideration of the causes of the degeneration of the tribe, which is due largely to contact with civilization, but partly inherent.—A. L. K.

Saint-Yves (G.) Les peuplades retrouvées de l'Asie centrale. (Revue Scientifique, Paris, 1900, 4^e série, XIII, 204-207.) In these articles the author gives a brief *aperçu* of the results of recent researches in Central Asian archeology and epigraphy. He points out the great importance of a knowledge of ancient Chinese and Mongolian civilization, and of the results of the early Buddhist, Nestorian, and Mussulman missionary efforts, and hints that the now sterile tundra of Siberia may have been the very hive of the first human civilization.—A. F. C.

von Török (A.) Ueber den Yézer und den Sachaliner Ainoschädel zu Dresden. (Archiv für Anthropologie, Braunsch., 1900, XXVI, 561-589.) Continuation of the report of the minute examination of these skulls which has been appearing in the *Archiv* for more than a year. The conclusion, with plates, is promised for the next issue.—L. F.

Virchow (R.) Ueber den Ursprung der Bronzezeit und ueber die armenische Expedition. (Mitth. d. Anthr. Ges. in Wien, 1900, XXX [80-84].) Chiefly a statement of the purposes and a sketch of the partial results of the archeological expedition of Belck and Lehmann in Armenia.—A. L. K.

AUSTRALIA AND PACIFIC ISLANDS

Andree (Richard.) Ein Moi Toromiro (Hausgötze) von der Osterinsel. (Globus, Braunsch., 1900, LXXVI, 389-390.) Description and figure of an idol from Easter island, deposited in the museum at Brunswick.—F. B.

Beyfuss. Schwerter aus Borneo. (Verh. d. Berl. Ges. für Anthr., 1899, XXXI, 448-452.) Deals with the manufacture, ornamentation (which is partly indicative of rank), and use of swords in Borneo. Head-hunting and allied practices are touched upon.—A. L. K.

Blumenreich (R.) Untersuchungen der Haare von Neu Irländern. (Verh. d. Berl. Ges. f. Anthr., 1899, XXXI, 483-486.) Report of a detailed study of hair of natives, chiefly female, of New Ireland. There is considerable variability.—A. L. K.

Fridolin (J.) Südeerschädel. (Archiv f. Anthropologie, Braunsch., 1900, XXVI, 691-715.) General description with tabulated measurements and sixteen plates of eighty-two skulls from the South Seas.—L. F.

Karutz (Dr) Zur Ethnographie der Matty-Insel. (Int. Arch. f. Ethnog., Leiden, 1899, XII, 218-223.) A description of several objects of ethnographic interest, with remarks on the ornamental art of the island, which is exemplified in illustrations.—A. L. K.

Preuss (K. Th.) Künstlerische Darstellungen aus dem Deutsch-Holländischen Grenzgebiet in Neu-Guinea. (Int. Arch. f. Ethnog., Leiden, 1899, XII, 161-185.) A description of the art of the northern Papuans, which is at times realistic in intent and at times decoratively ornamental. The author intends that "free ornament," that is, purely decorative, meaningless art, occurs among savages, and may coexist, as in this case, with realism or a style of art conventionalized from realism.—A. L. K.

Schmidt (P. W.) Die sprachlichen Verhältnisse Oceanians in ihrer Bedeutung für die Ethnologie. (Mith. d. Anthr. Ges. in Wien, 1899, XXIX, 245-258.) An argument in favor of the affinity of Melanesian and Polynesian languages, and of the general relationship of these with Malayan and Micronesian.—A. L. K.

Schurtz (H.) Schnitzereien der Maori. (Globus, Braunsch., 1900, LXXVII, 53-58.) Description of a number of recent Maori carvings with explanations given by the artist. All the figures represent ancestors, some of whom were transformed into demons.—F. B.

Smith (S. P.) Note on some Maori gods. (Int. Arch. f. Ethnog., Leiden, 1899, XII, 223-225.) Illustrations, accompanied by remarks, of six New Zealand idols carved in wood, the lower ends being wound with cord.—A. L. K.

Volz (W.) Zur somatischen Anthropologie der Battaker in Nord-Sumatra. (Archiv f. Anthropologie, Braunsch., 1900, XXVI, 717-732.) Brief general notes, followed by descriptive and anthropometric tables and discussion. At least two cranial types appear, but no specific conclusions are reached.—L. F.

AFRICA

Blundell (H. W.) A journey through Abyssinia to the Nile. (Geog. Journ., London, 1900, XV, 97-118.) Although mainly occupied with details of travel and geographical matters, reference is in one place made to the natives. This notice is concerned with the Gallas, or Ilmorro, as they call themselves. A very brief glance at their history is given, in which it is stated that they appeared on the frontiers of Abyssinia in 1542, and were at that time a pastoral people. Later they developed agricultural tastes, and became also famous breeders of horses. Their language is said to be divided into five dialects, and to belong to the "Proto-Semitic branch." The physical type varies considerably with the varying mixture with the surrounding peoples.—R. B. D.

Fournier de Flaix (E.) Les premiers Boers. (Rev. Scientif., Paris, 1900, 4^e série, XIII, 299-306.) Treats of the origin and formation of the Boer people of South Africa. The author points

out, among other things, the large intermixture of aboriginal blood in the descendants of the early Dutch colonists—as "assimilation by domestication" has taken place. This intermixture has not been without its effect upon their temperament, manners, customs, etc., and their warlike disposition.—A. F. C.

Fritsch (G.) Ueber die Körperverhältnisse der heutigen Bevölkerung Egyptens. (Mith. d. Anthr. Ges. in Wien, 1900, XXX [67-70].) The author finds, chiefly from photographs, that in the immediate past a change in the Egyptian type has taken place, consisting in the formation of a new type intermediate between that of the Arabs and the Fellaheen.—A. L. K.

Gallieni. Madagascar. (La Géographie, Bull. Soc. de Géogr., Paris, 1900, 1-29.) Contains an enumeration and brief description of the Madagascar tribes.—A. L. K.

Leprince (Jules.) Les Simons, sorciers de la Guinée française. (Rev. scientif., Paris, 1900, 4^e série, XIII, 399-401.) An interesting account of the origin, transformation, and process of dissolution of the Simons, one of the many secret societies of West Africa. According to the author they originated as a band of primitive patriots, thereby gaining an immense prestige; afterward turned into bandits, then, hunted by the whites and ridiculed by the blacks, their organization weakened, and the Simon of today is a tom-tom dancer, who tomorrow will be a beggar.—A. F. C.

Ruete (Said.) Der Totenkultus der Barabra. (Globus, Braunsch., 1900, LXXVI, 338-339.) Description of the Mohammedan funeral rites of northern Nubia. The body is wrapped in white cloth; the mouth, nose, ears, etc., are closed with cotton. The grave is scented, stones placed over the body. A clay vessel with water for birds is deposited on the grave. After the burial there is a celebration in memory of the deceased extending from four to seven days. The women wail, and, in one place, perform a ceremonial dance.—F. B.

Starr (Frederick.) The art of Benin City. (Am. Antiquarian, Chicago, 1900, XXII, 17-24.) A review of preliminary papers by Read and Dalton, F. von Laschan and Webster's cata-

Start—Continued.

logue. The art in ivory, wood, cast-iron, and bronze, representing the life of the people in many details, is considered to be purely African art, although the metal may be imported.—H. I. S.

EUROPE

Bancalari (G.) Forschungen und Studien über das Haus. (Mitth. d. Anthr. Ges. in Wien, 1900, xxx, 1-23.) A collection of names of domestic and other implements in various popular dialects of central Europe.—A. L. K.

Bonnemère (L.) L'influence orientale en Bretagne. (Bull. Soc. d'Anthr., Paris, 1900, 4^e série, x, 389-397.) The author finds in certain words, in ancient beads, and in patterns, indications of Phœnician influence in Brittany, and considers intercourse or contact easily explicable.—A. L. K.

Dumont (A.) Aptitude de la France à fournir des colons. (Bull. Soc. d'Anthr., Paris, 1900, 4^e série, x, 503-519.) Recognizes the inability of France to colonize, regards non-colonization as preferable, and sees the only hope for France in the spread and development of science.—A. L. K.

Folmer (H. C.) Die ersten Bewohner der Nordseeküste in anthropologischer Hinsicht, verglichen mit den gleichzeitig lebenden Germanen in Mitteleuropa. (Archiv f. Anthropologie, Braunsch., 1900, xxvi, 747-763.) Examination of all the available skulls and the existing literature regarding the early inhabitants of Friesland. Author takes issue with Virchow, holding that the same process has gone on in Friesland as in parts of Germany and that a former dolichocephalic race has given way to the present brachycephalic type of that region.—L. F.

Grillmayer (J.) Alte ländliche Wohnstätten aus der Umgebung des Schlosses Würting in Oberösterreich. (Mitth. d. Anthr. Ges. in Wien, 1899, xxix, 237-244.) An illustrated description of Austrian peasant houses.

Hoernes (M.) Die Anfänge der bildenden Kunst. (Mitth. d. Anthr. Ges. in Wien, 1900, xxx [19-20].) Points out that among present primitive peoples, "realistic," "religious," and

"decorative" art are found united and combined, while in prehistoric Europe they occurred in separate periods and in distinct cultures.—A. L. K.

Jackschath (E.) Ein deutsches Beschwörungs-buch. (Verh. d. Berl. Ges. f. Anthr., 1899, xxxi, 459-472.) A manuscript collection, about a century old, of magic formulae and spells, chiefly for veterinary use.—A. L. K.

Köhl. Neue steinzeitliche Gräber und Wohnstättenfunde bei Worms. (Mitth. d. Anthr. Ges. in Wien, 1900, xxx [46-50].)

Kollmann. Fingerspitzen aus dem Pfahlbau von Corcelles. (Mitth. d. Anthr. Ges. in Wien, 1900, xxx [20-25].) An ideal reconstruction of a female individual of the bronze age at Lake Neuchâtel, from impressions of finger tips in pottery. The reconstruction is based on the assumption of the unchangeability of physical types, which theory is defended.—A. L. K.

Laville (M.) Stations archéologiques de Draveil. (Bull. Soc. d'Anthr., Paris, 1900, 4^e série, x, 398-409.) A report on excavations on the Seine, pointing back to populations of the bronze and later neolithic age, probably raft-dwelling. Flint objects, pottery, and bones were found.—A. L. K.

Lefèvre (A.) Les préjugés historiques. (Rev. de l'École d'Anthr., Paris, 1900, x, 89-107.) An enumeration of the prejudices and unfounded current assumptions that must be dispelled before a true view of early and medieval French history can be obtained. The prejudices are chiefly German and Christian.—A. L. K.

Montelius. Ueber die Chronologie der Pfahlbauten. (Mitth. d. Anthr. Ges. in Wien, 1900 xxx [17-19].) The opinion is expressed that copper was known in central Europe earlier than 2000 B.C., and that neolithic Alpine culture dates back beyond 3000 B.C.—A. L. K.

Obici (G.) and Ferruccio (C.) Diffusione delle psicosi alcooliche in Padova ed in Venezia. (Riv. di Patol. Nerv. e Ment., Firenze, 1899, iv, 579-577.) An interesting study of alcoholism in Padua and Venice, during the period 1891-1898, males only being considered, woman suffering so rarely in both

Obici — Continued.

these cities from alcoholic psychoses that they may be left out of account. Padua and Venice are so close in geographical position, race, customs, habits, etc., that the diversities of their alcoholic psychoses are rather surprising. In Venice, as compared with Padua, alcoholic psychoses are much more prevalent, appear at an earlier time in life, and yield less easily to successful treatment. The author attributes the diversities in question to the different quality of the wine consumed in the two cities.—A. F. C.

Pitard (E.) Étude de deux nouvelles séries de crânes anciens de la vallée du Rhone (Valais). (*Rev. de l'École d'Anthr.*, Paris, 1900, X, 136-143.) A pronounced brachycephalism prevails in the crania from Rhone valley. The author intends to summarize the results of this and previous work on the same region in a future paper.—A. L. K.

Tappeiner (F.) Die Capacität der Tiroler Schädel. (*Zeitschrift f. Ethn.*, Berlin, 1899, XXXI, 202-235.) A tabular presentation of the capacity, cephalic index, sex, and other character-

istics of 918 crania from the Tyrol. The conclusion is reached that the capacity increases with brachycephalism.—A. L. K.

Vram (H.) Untersuchung der in Aquileja gefundenen Schädel. (*Archiv f. Anthropologie*, Braunsch., 1900, XXVI, 765-767.) Brief description of 27 skulls.

Winter (A. C.) Eine Bauernhochzeit in Russisch-Karelien. (*Globus*, Braunsch., 1900, LXXVI, 315-319.) Description of the elaborate marriage ceremony of the people of eastern Finland. The whole ceremony is accompanied by traditional songs. It is characterized by a period of walling on the part of the bride and her friends before the marriage ceremony, ceremonial baths, and an expression of her submission to the bridegroom's father.—P. B.

Zeppelin (E.) Ueber die ethnographischen Verhältnisse der prähistorischen Bodensee Bevölkerung. (*Mitth. d. Anth. Ges. in Wien*, 1900, XXX [25-27].) Theories as to prehistoric races in the vicinity of Lake Constance.—A. L. K.

NOTES AND NEWS

The Osage Indians in France—The Bureau of American Ethnology has recently procured two rare pamphlets,¹ both of which relate to a visit to France, in 1827, of six Osage Indians. Both brochures bear the imprint of Paris, 1827, while from their text it would seem that there had been a third and earlier account of the Osage printed at Havre, or else the Havre pamphlet appears now as one of the Paris publications entitled *Six Indiens Rouges*, of which the present copy is from the "Troisième édition, revue, corrigée et augmentée," etc. The author of the other Paris pamphlet, *Histoire de la Tribu des Osages*, quotes from the Havre book by title, *Les Indiens Osages*, and both criticises and corrects its statements. His quotations can be found verbatim in the Paris pamphlet, *Six Indiens Rouges*, but not upon the designated pages. Whatever may be the facts as to the Havre publication, these pamphlets, one of which had reached its third edition, testify to the lively interest awakened by the coming of these aborigines of the territory that had so recently passed from the dominion of France.

This popular interest was undoubtedly augmented by the spread of the tradition which is said to have influenced these Indians to take their long journey. The story is practically the same in both accounts. I translate that given in the *Histoire*, chapter xviii, p. 90 :

"The most distinguished of the six Osages that we have with us is a prince of the blood of the reigning dynasty. His name is Kishagashugah. . . . The ancestor of this chief of the Osage tribe came to France under the reign of Louis XIV, whom he visited and from whom he received a most distinguished welcome. Flattered by the gracious reception given him by this monarch, and with the manner in which, following the lead of the king, he was received by the gentlemen of the court, as well as by the officials and the people of France whom he

¹ *Histoire | de la tribu | des Osages, | peuplade sauvage de l'Amérique septentrional, | dans l'État du Missouri, | l'un des États-Unis d'Amérique; | écrite d'après le six Osages actuellement à Paris; | par M. P. V. | [etc.] Paris, | chez Charles Béchet, libraire, | Quai des Augustins, N° 57, | [etc.] | 1827. (12°, 92 pp.)*

Six | indiens rouges | de la tribu Osages | arrivés du Missouri au Havre, | Le 27 juillet 1827, | sur le navire Américain | New-England, cap. Hunt, | Troisième Edition, | revue, corrigée et augmentée de particularités intéressantes | sur leur séjour au Havre, | Paris. Delaunay, libraire | [etc.] | Palais-Royal, N° 243. | 1827. (12°, 36 pp., pl.)

visited, he expressed on his return home the enthusiasm which he had conceived for the French people.

"Concerning this, the author of the pamphlet printed in Havre says, p. 27, that on returning from the voyage to the court of Louis XIV, the Osage traveler called together his tribe and gave an account of his journey. He says further that *at the recital, the present chief* (he whom we now have with us in France, and to whom he attributes 39 years of age), *cried, I also will visit France, if the Master of Life permits me to become a man.*

"Our estimable author, who always confounds places, persons, peoples, and times, pressed by a desire to publish his book, has not noticed that, in order to make this recital at the commencement of the nineteenth century, the grandfather of our present guest, who without doubt was of ripe age when he visited France under Louis XIV, in the seventeenth century, must have been very old when he excited the enthusiasm of his grandson.

"It is very evident that tradition alone revealed to Kishagashugah the voyage of his ancestors; in fact we know from him that it is to the history of this voyage that we owe the visit which he now makes us in 1827, with his wife, his cousin, and three distinguished warriors of his tribe."

In *Les Indiens Osages*, third edition, the monarch visited by the ancestor of Kishagashugah is said to have been Louis XVI. This is obviously an error, as would appear from the argument just quoted, which is based on the fact that the king in question was Louis XIV.

A visit of Osages to the court of Louis XIV is not improbable, as it was during the latter half of this monarch's reign that the discovery of the Mississippi by the French had taken place, Marquette's voyage and La Salle's heroic venture occurring in the last quarter of the 17th century. The planting of a French colony in Louisiana had been a favorite scheme at the French court, and when such plans were afoot it not infrequently happened that groups of Indians were taken to Europe to amuse and interest the patrons, arouse the sympathy of the philanthropic, and to impress the savages with the power of the white man so that on their return home they might influence their tribesmen to become submissive allies.

The spirit of this old method of procedure seems to live in the naive outburst of the author of the *Histoire* in the opening paragraph of chapter xvii, p. 81, where he says:

"The Osages, an eminently warlike tribe, profess a feeling of great admiration for the French nation, whose military glory has for so long a time been known to them. Living near St Louis and New Orleans, with which cities they have had frequent relations, the Osages, besides having much curiosity, have often heard the glories of our armies

exalted ; they have known that our soldiers contributed to the emancipation of the United States, which they consider as their mother country. Hence their enthusiasm for the French, whom they look upon as a people of demigods whom nothing can resist. These are the causes which prompted the voyage of the six Osages now with us, which they had meditated for several years."

He then goes on to tell of the preparation and start of the Osages upon their journey, as follows :

"They assembled at first to the number of twenty-five, with the object of visiting the chief of white warriors, the king of France, their first father. It took them four years to provide for the expenses of this voyage, and in the meantime death and the exigencies of their families reduced their number to twelve. These, rich with the proceeds of the four years' hunt, descended the Missouri, in the beginning of 1827, on rafts, upon which they had placed the furs they were to carry to their first father, the funds produced from the sale of other furs which they destined to defray the expenses of the voyage, and, finally, their arms and their clothes. Heaven, which so often overwhelms the projects of men, did not wish that the twelve Osages should arrive happily. When near St Louis their raft capsized, and the waters engulfed furs, money, arms, and baggage. Our travelers were lucky to reach the shore by swimming, and to arrive, naked but in good health, in the city of St Louis.

"This deplorable event was calculated to cause an abandonment of the project, but the savages were persevering. At St Louis was a soldier whom they had often seen, who by his bravery and humanity had for a long time held their confidence. They knew that this white warrior was a Frenchman, about to return to his native country, and they asked him to take them along. They had now no presents to offer to their first father ; but what matter ! They will say to him that they did have some which the river swallowed up, and he would believe them, because he knew that they never spoke falsely. They had no money to pay their way ; their great father would provide it ; the chief of the great French tribe must be generous and hospitable ; they would go. They persuaded a captain to give them passage on his steamboat ; nothing kept them back. Nevertheless, at the moment of departure some of them recoiled from the perils of the journey. Six gave up the voyage ; the others, four men and two women, embarked under the care of Mr David Delaunay, a native of France who had lived twenty-five years in St Louis and was a colonel in the service of the United States. . . . They went down the Mississippi on the steamboat *Commerce* to New Orleans, . . . where they embarked on the American ship *New England*, in command of Captain Hunt."

After a long and difficult passage, the entrance to France is thus described by the writer of *Les Indiens Osages* :

"On entering the docks of Havre they (the Indians) mounted the bridge and thanked God for having accorded them a safe voyage. . . .

They arrived the 27th of July at noon. They were on the deck of the ship, and it was very hot. A great part of the population of the city covered the wharf, the outer port, and even the yards of the shipping. This crowd troubled at first the savages, little accustomed to exciting so lively a curiosity; but, reassured by their guide, they became pleased. The crowd grew each minute, and the disembarkment was obliged to be protected by a platoon of troops of the line. The Indians were taken to the Hotel Hollande, followed by a large concourse of people, drawn together by the novelty of the spectacle, constantly kept back by the soldiers of the guard, to whom the travelers had been confided.

"Arrived at the hotel, the Indians asked for refreshments, and were served with various kinds of wine. They preferred the sweet wines, particularly that of Malaga. One of them, the big soldier, though naturally sober, was sickened by the mixture. Several people were introduced into the parlor where they were resting. The Indians presented their hands to them, with a bow thanking them for the honor which they (the Indians) were receiving. The chief called for the master of the house in order to wish him good-day, which is their custom.

"In the afternoon they were taken to the country house of the Mayor of Havre. They walked in the gardens, looking with indifference upon the beautiful trees and rare plants which ornamented them, but, at the turning of a path, having recognized a pine from Missouri and a poplar from Louisiana, their joy was extreme and their expressive eyes glistened with brilliant fire.

"Our Indians went to the play. This event, for it was one, had drawn together so numerous a concourse of spectators that the greater part were not able to find a place in the hall. The Osages arrived at a quarter to 7 o'clock; two boxes in the first gallery had been reserved for them. They took their seats in their natural costume; that is to say, naked to the waist; the two women alone were dressed, according to the mode of their country. The play commenced with the opera, *Blaise et Babet*, which did not appear to amuse the Indians any more than it did the French people. It is true that the savages dissimulate their sensations with much art, and that they do not manifest the weariness which they feel by any exterior sign. Tired, without doubt, of being forgotten and half stifled in their box, where the temperature was 25°, they wished, when the piece was ended, to breathe a little more freely in the foyer, but, surrounded again, pushed, pressed, nearly asphyxiated, they sought refuge under the vestibule where they were crushed against the gates. They were obliged to retreat and not wait for the second piece. . . . They escaped on the Place de la Comédie. It was then that the chief expressed his discontent to his guides. 'In my country,' said he, 'four soldiers would suffice to hold at a distance eight or ten thousand Indians; we would never have such a spectacle as this! If we have braved the dangers of the sea, it is not to be stifled on the other side of the great lake!'

The writer of the *Histoire*, remarking upon these experiences, says:

"Fatigued with so much fêting, and dazzled by so many things, they sighed for those moments of solitude when alone they could talk over

the events of the day and fix them in their memories, so that they might be able to remember and tell them to their fellow tribesmen at home.

"At 6 o'clock on the morning of the 7th of August, they took the steamboat for Rouen, where the crowd, which had been for four days expecting them, precipitated itself upon the wharf upon the arrival of the boat from Havre. To avoid the accidents which the crowd of curious people in their eagerness might occasion, the Osages were landed a league from the city. Carriages were waiting for them there, and they were taken to their hotel. At this new place they were the object of the same curiosity as at Havre. Everywhere they were followed by the crowd. At last arriving at Paris on the 13th of August, they were set down at the Hotel de la Terrasse, rue de Rivoli. There, as at Rouen, an innumerable crowd of curious people were gathered many days before the door of this hotel without being able to see them; because, having come from such a distance to salute the Chief of French warriors, their first father, they wished to conform to their own usages, which demanded from a guest that he make his first visit to the chief of the tribe."

Unhappily the desire which the Osages expressed of presenting their respectful homage to the French king, could not be satisfied as speedily as they wished, because the etiquette of the Court and social usages were opposed to it. It was only on the 21st of August, 1827, at 11 o'clock in the morning, that they were accorded an audience with His Majesty at Saint Cloud. His Majesty received them with the goodness of a tender father, saying to the chief that he was pleased to see him, that the Osages had always been faithful to France while their country had been under his rule, and that he hoped the Osages would be equally faithful allies of the United States. His Majesty then addressed M. David Delaunay, and expressed his satisfaction upon the arrival and the visit of the savages. Mme. la Duchesse d'Angoulême accorded to them the favor of seeing the French children, speaking to the chief in the kindest manner. The chief addressed the King as follows :

"My great father, in my youth I heard my father speak of the French nation. I formed then the purpose of visiting this nation when I should become grown. I have become a man, and I have accomplished my desire. I am today with my companions among the French people whom we love so much, and I have the happiness to be in the presence of their King. We salute France !"

What became of the Indians after this interview we are not told, save that "they returned to Paris."

Both pamphlets mention the territory and the neighbors of the Osage, and briefly describe, under sections or chapters, their customs,

avocations, and beliefs. It is evident that both authors had consulted the same authorities, — the *Géographie Universelle* and the numerous volumes of the *Journal des Voyages*. In the *Histoire* one comes upon statements which indicate that the author had sought to obtain first-hand information, either from the Osage themselves, or from M. Delaunay, who, he tells us, had been an observer of the manners of the tribe. The literary style of this pamphlet is superior to that of the other; greater care has been observed in presenting facts, and several thoughtful deductions are noteworthy.

While these pamphlets present no new ethnologic material, they afford a few interesting glimpses into the working of the untutored mind when confronted with unfamiliar conditions, and give a vivid picture of the French populace when, years ago, they were brought face to face with people of a strange race.

Les Indiens Osages has a colored frontispiece representing the six visitors. The men, as far as scanty clothing, are sufficiently Indian, but the women's gowns betray a French touch. These are of striped goods, one red and white, the other blue and white; the skirt falls a little below the knees, and is finished around the bottom with a band of red or blue; a similar band outlines the low neck, forms a belt, and binds the short puffed sleeves. The women stand with arms folded, their heels together, and toes turned out, as if taking "the first position" in a French dancing lesson. Their hair falls in loose waves over their shoulders. Mr Colson, whose name appears as having made the sketches "d'après nature," was evidently not aware that among the Osage the unbraided hair of a woman is the sign of mourning.

ALICE C. FLETCHER.

Explorations in Mexico—Prof. Frederick Starr, of the University of Chicago, has recently completed his tenth season of study among the native tribes of Mexico, the last expedition having been aided by Mrs Frank G. Logan of Chicago. Five tribes were examined — the Chinanteco, Chocho, Mazateco, Tepehua, and Totonaco — and among each fourteen different measurements were made of one hundred men and twenty-five women, in addition to front and profile photographs and plaster-cast busts of notable types. Professor Starr also recorded a fair vocabulary of the little-known Tepehua tribe, and investigated the ancient art of beating paper from the bark of trees, still practiced by the Otomi. It is expected that these investigations will be completed by next year and that the results will be published during the year following.

Dr J. Walter Fewkes, ethnologist of the Bureau of American Ethnology, has returned to Washington after eight months' absence in the field. During this time he has devoted himself to a continuation of his researches on the religious festivals of the Hopi Indians of Arizona, confining his studies to the pueblos of Walpi, Sichumovi, and Hano. He has brought back exhaustive notes on several winter ceremonies which were but partially known to ethnologists, and on several ceremonies which have never been described. Among the former may be mentioned the New Fire, Winter Solstice, *Powamó*, and *Palúlukeñti*, the last-mentioned rivaling in character the celebrated Snake dance. Among the latter are the *Owakulti*, the *Montcita* (a warrior celebration), the Buffalo dance, and the abbreviated winter rites of the Flute priests, the *Lalakenti*, *Mamrauti*, *Sunykoli*, and the Sun priests. In addition to complete notes he has made photographs and sketches of many undescribed altars, shrines, pictographs, and ceremonial paraphernalia. He has also studied Hopi migration legends, traced trails of clans in their migration from distant points in Arizona to the Tusa-yan pueblos, and identified former habitations. He has made a complete census by clans of the population of the East Mesa, and has prepared maps illustrating their localization in these three pueblos. A novel collection is a Hopi "codex" consisting of 280 pictures of *katsinas*, drawn in color by Indian artists, showing the symbolic markings and dress of these supernatural personages. These pictures not only illustrate aboriginal methods of drawing, but also are of great value in a study of the ceremonial paraphernalia of the *katsinas*, or native gods. Dr Fewkes has discovered many undescribed ruins in Arizona, and has brought back a beautiful collection of photographs of ancient habitations made during a reconnoissance in April last. These ruins are well preserved: their walls are still standing over twenty feet high, the flooring of several stories being still in place. They are among the best ever visited by him in Arizona, and undoubtedly contain most important material for the solution of problems connected with the prehistoric peoples of the Southwest.

Pennsylvania University Lectures—A course of free public lectures, illustrated by objects in the Museum, has recently been delivered under the auspices of the Department of Archeology and Paleontology of the University of Pennsylvania, as follows: April 4, "Present-day survivals of primitive modes of thought and feeling," by Prof. Lightner Witmer; April 11, "The origin of ornament," by Mr Stewart Culin; April 18, "Recent excavations in Babylonia," by Dr A. T. Clay; April 25, "Coinage of the ancient Greeks," by Dr William N.

Bates; May 2, "The genesis of musical instruments," by Prof. Hugh A. Clarke; May 9, "Impressions of the Philippine islands," by Prof. Simon Flexner; May 16, "Household life of women in the colonial period," by Prof. John B. McMaster.

The Committee on Public Lands of the House of Representatives in Congress is considering the bill prepared on behalf of the Committees of the American Association for the Advancement of Science and the Archaeological Institute of America for the preservation of prehistoric monuments, ruins, etc., on the public domain, by reserving the lands on which they stand from entry and sale. The bill has been referred to, and is now in the hands of, a subcommittee consisting of Messrs Shafroth of Colorado, Moody of Oregon, and Jones of Washington. The members of the two societies, and citizens interested with them, may materially assist in securing some affirmative action if they will signify their desire in person or by letter to any Member of Congress with whom they may be acquainted.

Deaths—On March 9th, CHARLES E. WEST, of Brooklyn, aged 91 years. Dr West was one of the founders of the American Association for the Advancement of Science and of the Long Island Historical Society; he was a fellow of the Royal Antiquarian Society of Denmark, a member of the American Antiquarian Society, the American Philosophical Society, and of the New York and Long Island Historical Societies.

DR C. PIAZZI SMITH, formerly Astronomer Royal of Scotland, author of some famous speculations on the construction and purposes of the Great Pyramid as an exponent of the standard of measurement.

In Paris, February 17th, PHILIPPE SALMON. Born at Cerisiers, Yonne, France, July 27, 1823; was an officer of public instruction, president of the Société d'Anthropologie de Paris in 1893, director of the École d'Anthropologie in 1896, president of the Commission des Monuments Mégalithiques in 1898.

At Paris, April 23, ALPHONSE MILNE-EDWARDS, aged 65 years; director of the Museum of Natural History and vice-president of the Academy of Sciences of Paris.

At Washington, April 10, FRANK HAMILTON CUSHING. A more extended notice of Mr Cushing appears elsewhere in this issue.

In London, May 4, LIEUT.-GEN. AUGUSTUS HENRY LANE FOX-PITT-RIVERS, aged 73 years; vice-president of the Society of Antiquaries; president of the Anthropological Institute; author of many works on archeologic subjects. He assumed the name of Pitt-Rivers in 1880.

Mrs Phoebe Hearst has undertaken to defray the expenses of explorations and excavations in various parts of the world, to obtain collections for the University of California. Dr George A. Resinal is expected to have charge of the work in Egypt, Dr Alfred Emerson in Greece and Etruria, Dr Uhle in South America and Yucatan, and Dr P. M. Jones in California and Mexico. The report that Mrs Hearst proposes to establish a Museum of Archeology in connection with the University of California is not authorized.

The Seventh Annual Reception and exhibit of recent progress in science was held by the New York Academy of Sciences at the American Museum of Natural History, April 25-26. The exhibit in Anthropology, in charge of Dr Franz Boas, consisted of (1) Symbolism of the Arapaho Indians, from the collections of the Jesup Expedition, by Alfred L. Kroeber; (2) Basketry designs of California, from the collections of the C. P. Huntington expedition, by Roland B. Dixon; (3) Designs of the Gold of Amoor river, from the collections of the Jesup North Pacific Expedition, by Berthold Laufer; (4) Archeology of the coast of southern British Columbia, from the collections of the Jesup North Pacific Expedition, by Harlan I. Smith; (5) Implements of the Eskimo of Southampton island, by George Comer. All the collections exhibited were from the American Museum of Natural History.

Cannibalism in Sarawak—At a recent meeting of the Anthropological Institute in London, Mr C. Hose, of Baram, Sarawak, stated that there were cases in which human flesh was eaten in Borneo, but did not think they could be properly called cannibalism. Sometimes they cut off strips of flesh from their enemies, but these were not eaten, as some observers had too hastily concluded. On the contrary, they were stored in bamboos and used as an offering to the hawks from which the omens were taken. The occasions on which human flesh was eaten were cases of chronic illness in which a small piece, swallowed with great difficulty by the patient, was supposed to be curative. In Dutch Borneo the people did roast and eat human flesh, but only very rarely, and the practice had been stopped by the Dutch. When a male child about fourteen years old was very ill, it was thought proper to keep him alive, if possible, at the expense of a female life, which was less valuable; hence, as a last chance of saving his life, a sister would be sacrificed, and a small piece of the flesh given to the boy to eat.

The Henderson Maya Dictionary—Dr C. H. Berendt, writing to the Smithsonian Institution, in 1867, in regard to his explorations in Central America, during the previous two years, remarked as follows: "I

also made a very agreeable and useful acquaintance in the person of Rev. Alexander Henderson, a distinguished linguist, whom I found occupied with a dictionary of the Maya language, giving the dialect actually spoken in the district of Bacalar, Yucatan, and in some recent settlements of Yucatan Indians in the territory of the colony. Having been engaged myself for a number of years in the work of reproducing from old and rare manuscripts the Maya language as spoken and written in the sixteenth and seventeenth centuries, I derived both information and pleasure from the intercourse with this learned missionary." (*Smithsonian Report*, for 1867, pp. 420-21.) It may not be generally known that the manuscript dictionary alluded to in this statement is now in possession of the Bureau of American Ethnology, having been procured by Prof. Cyrus Thomas and transferred to the Bureau archives. It consists of six volumes, averaging 250 pages each, three of the volumes being Maya-English and three English-Maya. From a statement found at the end of vol. III of the Maya-English part, it appears that the total number of pages of this portion is 696, averaging 30 words to the page; that it was begun in April, 1859, and finished August 11, 1864, and that the English-Maya portion was finished September 6, 1866. It is written in a clear hand throughout.

MINOR NOTES

DR FRANZ BOAS, Curator of the Department of Anthropology of the American Museum of Natural History, has been honored by election to membership in the National Academy of Sciences at its meeting held in Washington, April 17-19.

PROF. JOHN RHYS will preside over the Section of Anthropology of the British Association for the Advancement of Science at its seventieth annual meeting at Bradford, beginning September 5th.

MR ALFRED L. KROEBER has been appointed Curator of Anthropology in the museum of the Academy of Sciences of California at San Francisco.

THE GENERAL BOARD of Cambridge University proposes to establish a lectureship in ethnology for Dr Alfred C. Haddon.



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NEW SERIES

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NO. 3

THE OBSIDIAN MINES OF HIDALGO, MEXICO

By W. H. HOLMES

A recent visit to Mexico afforded the writer an opportunity for studying two great sites representing the ancient peoples and their culture—the ruins of the city of Xochicalco, the “Hill of Flowers,” in the state of Morelos, and the obsidian mines of Hidalgo. These studies have confirmed his previously formed notions respecting the remarkable achievements of the pre-Columbian tribes of the southern part of the great plateau of Mexico, and have enabled him to form a still more vivid and complete conception of their unique and remarkable culture than was possible without such observation.

The obsidian mines alone will receive attention in this place. Mining operations by native tribes in various regions have been recorded in a casual way by early writers, but have been brought much more forcibly to our attention by recent archeological researches. At various points, from Lake Superior on the north to Argentina on the south, traces of mining and quarrying¹ have been noted, and no doubt many other sites in Central America and South America remain to be located.

¹ The terms *mining* and *quarrying* are here used as synonyms, but the former has generally been applied to the obsidian workings.

Obsidian was extensively mined by many of the native peoples of America. It is a brittle stone—a natural glass—fused in Nature's mighty furnaces and poured out in sheets or thrown out in fragments from the craters of volcanoes. Cooled under proper conditions, the glassy rock is homogeneous, breaking up in columnar form, or otherwise in irregular masses. In Yellowstone Park and in Oregon and California there are numerous great sheets of this glassy product. In Mexico the volcanic formations of the southern end of the continental plateau furnish extensive deposits from which the energetic tribes derived the raw material for making their implements and ornaments. When good qualities of the stone were discovered, quarrying was resorted to, and the requirements of the great Nahuatl peoples were such that in course of time extensive mining was necessary in order to supply the demand.

The uses of obsidian are somewhat limited, owing to its glassy character, but it is readily shaped by fracture into implements of certain classes, such as knives or razors, spearpoints, arrowheads, and scrapers. Less frequently the shapes were elaborated by pecking and grinding, and some remarkable results were achieved; round and oblong beads were fashioned, wonderful labrets, ear ornaments, and even vases, masks, and animal forms were executed and exquisitely finished.

Artificial distribution of obsidian has been very wide. Hardly an occupied site in all Mexico and Central America can be found that does not furnish examples of obsidian implements or fragments. The flake-knife is the simplest and most universal of the flaked forms, and occurs in great numbers in and about the valley of Mexico. The immense refuse deposits of the ancient city of Tenochtitlan, now the City of Mexico, are in places literally black with the broken knives, and San Juan Teotihuacan furnishes an apparently inexhaustible supply of these and other forms of implements. The latter place, however, has its supply of the raw material immediately at hand. The bed of the Río San Juan,

which runs through the ancient city, and even the plains about, furnish boulders and irregular masses practically without limit. The people of the valley did not depend on the scattering local supply. It is certain that they explored up the obsidian-producing slopes and streams, finding the deposits in place, and that they engaged extensively in the arduous work of quarrying. Among the several localities reputed to show indications of mining operations, that situated on the Guajalote estate, some twenty miles northeast of Pachuca, in the state of Hidalgo, has been most frequently referred to. The writer considered it great good-fortune to have been able to make a visit to this place.

Forty-three years before the date of my visit Prof. E. B. Tylor, of Oxford, examined the Guajalote obsidian deposits, and in his *Anahuac* has graphically recorded his experiences and observations.¹ In appendix I, he gives a free translation of Torquemada's account of the flaking of obsidian by the Aztecs. This account, unfortunately, is so vague that little is to be learned from it, save perhaps that the flaking was done by pressure with a wooden implement. It is not impossible, however, that some serious misapprehension existed in Torquemada's mind, and that one or more of the vital features of the process have been omitted.

Reaching Pachuca by rail, the party, consisting of Prof. G. K. Gilbert, Mr W. W. Blake, and the author, took a conveyance by way of Real del Monte to the estate on which the Jacales, a group of escarped hills, are situated. The highway led gradually up the sinuous contours of the mountain slopes, and as far as Real del Monte, situated on the northern side of the range, it was in excellent condition: but beyond the stone quarries, a little to the east of that village, it became exceedingly rough, and for several miles was barely passable for the horses and empty vehicle. Late in the afternoon the hacienda was reached. Presenting our letter of introduction, we were received and entertained by the

¹ E. B. Tylor, *Anahuac*, p. 14.

proprietor, Señor Don Rafael Amador, a gentleman of most excellent local reputation. During the evening we searched the fields in the vicinity for relics of the ancient time, everywhere finding fragments of obsidian, flakes, worked pieces, and implements.

Early in the morning we were supplied with guides and saddle-horses, and conducted to the mines, some three miles farther on. The trail led through the forest, over rising ground, to the lower slopes of the Sierra de las Navajas, or Mountain of the Knives, which rose to the northeast in a lofty ridge. Beyond are the rugged buttes called Jacales, from their hut-like appearance.

At Pachuca and Real del Monte we had made inquiries respecting the obsidian mines and their situation, and heard some interesting and curious stories. We were told that it was a volcanic region, in which were many craters and sink-holes of ancient origin and unexplored depth. Some were called blow-holes, and were said to be set with crystals of glass so sharp that no one could descend into the openings, for the reason that the ropes used in the descent would be cut by the projecting edges.

Reaching the site, we found the broad ridge covered with open pine forests, in places overgrown with tall grass, and, on the steeper parts, with underbrush. Everywhere were scattered fragments of obsidian, and presently we came upon groups of mounds alternating with depressions and pits extending indefinitely up the forest-covered ridge. We were cautioned by our guides to beware of the pits, as they were scattered everywhere through the glades and were hidden by the rank grass. This caution was indeed necessary at first, but we soon learned to recognize the various features of the site. The pits and depressions are the ancient mines, while the hillocks are the heaps and ridges of débris thrown out from them.

The writer was prepared to expect just these phenomena, for the flint quarries of the north are in most respects identical; but the work was more extensive than he had anticipated, although perhaps no more extensive than on the two great quarry

sites of the United States,—one on Flint ridge, near Newark, Ohio, and the other near Hot Springs, Arkansas. The enterprising peoples of the valleys below must have operated the mines vigorously for centuries to have thus worked over hundreds of acres of the mountain side, and so fully and profoundly, moreover, that the deep pittings and heavy ridges of excavated *débris* are practically continuous for a mile or two in length and cover a width reaching in places possibly half a mile. It is not unlikely that there are other worked areas in the vicinity, not reported to us. No outcrops of the obsidian, or, in fact, of any other rock, are to be seen on this part of the mountain, and it is apparent that the ancient miners had exploited the entire slope in search of deposits lying at varying depth beneath the surface.

Notwithstanding the fact that more than four hundred years have passed since active operations in these mines were suspended, evidences of work are perfectly distinct, and the pittings and their accompanying ridges of *débris* are as pronounced in outline as if they had been made but ten years ago. In the main, the diggings are irregular in arrangement and of no great depth. Many isolated excavations are scattered about, while others coalesce, connecting one with another in irregular order over acres of ground.

The depth of the wider depressions usually does not exceed six or eight feet, but some are deeper, and many take the form of wells from three to ten feet in diameter and often fifteen or twenty feet deep, with vertical or overhanging walls. Many of these must have been much deeper, for the *débris* thrown out is more extensive than the present openings would warrant, and there can be no doubt that in numerous cases tunneling was continued horizontally or obliquely for considerable distances along productive layers. The heaps and ridges of *débris* thrown out are rarely above ten feet in height, but they are well-pronounced and abrupt, and the total irregularities of the site are so great that exploration is tedious and difficult. Very generally the

débris is intermingled with broken obsidian, and in many cases it seems to consist almost exclusively of broken fragments and flakes left by the workmen engaged in roughing-out the forms desired. In places there are large heaps of flakes where the choice fragments of stone were brought from the mines and placed in the hands of the flakers to be worked.

The industry must have been conducted for long periods, as extensive areas are covered with these deposits of pure black ringing flakes and fragments. One great heap which lies upon the mountain slope is over forty feet in vertical extent and many feet in depth, comprising perhaps 20,000 or 30,000 cubic feet of flakage. Plate XV shows our party at work digging into this remarkable deposit. No headway could be made, however, for there was no earth to hold the flakes together, consequently the holes dug were immediately filled by the sliding, tinkling slivers of glass, every piece of which is as clean and incisive of edge as when struck off by the workmen hundreds of years ago.



FIG. 42.—Section of great deposit of obsidian flakage on the mountain side.

The top of the deposit, as shown in the section (figure 42, *a*) is quite level, and is perhaps 20 by 40 feet in extent. Here, no doubt, the workmen sat and conducted their labors while the miners brought the stone painfully extracted from the pits, the nearly closed mouths of which are scattered over the slopes



Photo by G. K. Gilbert

EXAMINATION OF THE GREAT DEPOSIT OF OBSIDIAN FLAKAGE ON THE MOUNTAIN SIDE

above (b). At one side and a little above this heap the remains of a small stone house were found, the remnants of walls indicating an original structure only 12 by 13 feet and of no considerable height. In other places, especially near the lower end of the worked area, are the remains of much more considerable dwellings, but none of these appeared to have been important structures, being irregular in plan and grouping. They probably served for the use of the mining community, assembled at this point for limited periods at least. The walls, of small, irregular stones, are so much reduced that their thickness and surface character could not be determined without excavation. None is over two or three feet in height.

As already stated, the excavations and ridges of débris are often continuous over large areas, and there is general irregularity of form and arrangement. But where an extensively operated mine has been somewhat isolated, the ridges of débris usually encircle the pit on three sides, and extend outward on the fourth side, in a rough way like the arms of the letter U, as shown in figure 43.

There was thus left an open approach to the mine on the level of the general surface. The section of an ordinary group of mines is shown in figure 44.

The obsidian must occur in considerable bodies, as the fragments left upon the surface are of large size and are homogeneous in texture. The color is usually black or blackish, but in places there are varieties of pale greenish cast and having a satiny play of color due to a peculiar form of crystallization known as chatoyancy.



FIG. 43—Map showing mines and debris heaps.

Being without appliances for descending into the deeper mines, we learned little of the subterranean phenomena, and discovered no traces of the implements used in the mining operations, save a

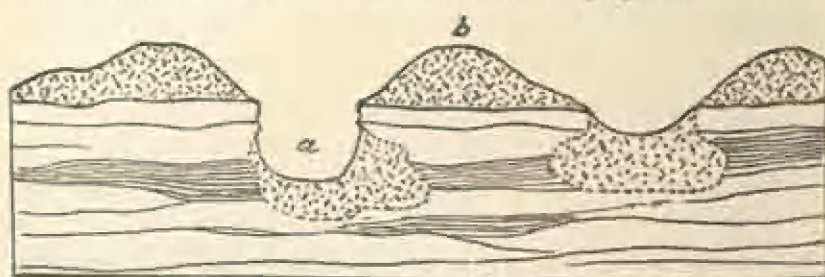


FIG. 44.—Section through mines and refuse deposit.

number of hammerstones, which are identical in shape with those used in our northern quarries. The larger specimens, four or five inches in diameter and somewhat discoidal or cheese-shaped, may have been used in breaking the obsidian in the mass, but the smaller examples, many of which are globular in form, must have been used in the hand simply, or with a light haft attached, in the work of breaking the fragments and trimming them down to the desired contour. It does not seem likely that these implements were used in the more refined operations of flaking and knife-making. The stone is usually a tough lava, and the peripheries show the usual evidences of battering.

Long before reaching the mines the writer had speculated upon the probable character of the shaping work done and the nature of the rejectage to be expected. As the ancient dwelling sites of the general region are strewn with countless knives derived by fracture from nuclei of approximately uniform shape, and as the exhausted nuclei are also found in great numbers, evidence of the roughing-out of these nuclei was to be expected on the quarry site. Examination developed the fact that the rejectage is literally filled with the abortive forms resulting from the roughing-out of nuclei which were rejected because lacking in some of the characters necessary to successful blade-making. It was

requisite that the material should be fine-grained and uniform in texture; the shape had to be rudely cylindrical, and it was essential that one end should be smoothly squared, so that the flaking tool would have exactly the right surface for receiving the stroke or other form of impact. Of course the flake-knives were not made upon the quarry site, as the edges of the blades were so delicate that transportation would have subjected them to injury; therefore the selected nuclei were carried away and the knives made whenever they were required.

As indicated by the rejectage, the nuclei produced averaged four or five inches in length, and two to four inches in diameter. The largest nucleus that has come to the writer's attention is now preserved in the Field Columbian Museum, and is about eight inches long and six inches in diameter. Although from Mexico, the exact place of its origin is not known. It has been roughed-out by a few dexterous strokes, which probably determined the flaking capacity of the piece and gave it the desired rudely cylindrical form. The specimens found in the quarry-shops are of course such as did not lend themselves readily to manipulation and were thus not worth carrying away.



FIG. 45.—Typical rejects of nucleus-making, from the quarry-shop debris.

Typical rejects are shown in figure 45. They are irregularly cylindrical or polygonal, and show a few of the facets or flutings made in testing the texture and in shaping the form. The

majority of the specimens are less symmetrical than these, and many are broken or otherwise manifestly defective.

It is impossible to form any reasonable estimate of the number of successful nuclei carried away, but the product of the vast work on this site must have been enormous.

The post-quarry history of these nuclei may briefly be traced. They were distributed far and wide among the people, and no

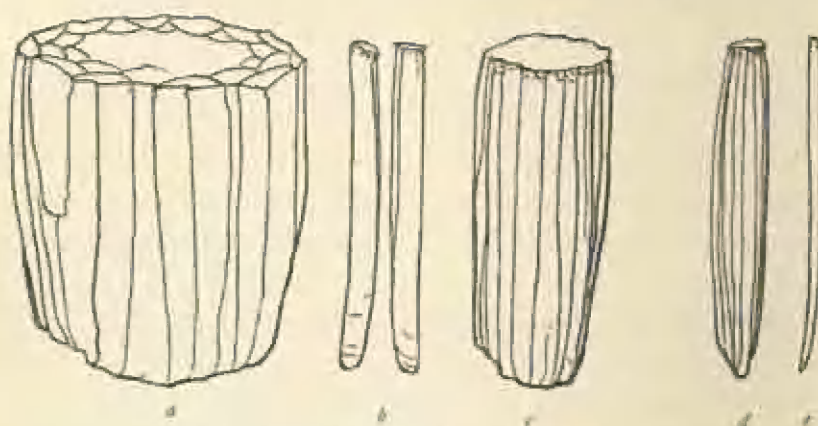


FIG. 46.—The making of knives and the exhaustion of the nucleus.

doubt formed an important feature in trade. When knives were required, the nucleus was taken up and the necessary implements struck off, but whether by direct percussion or by pressure we are not yet able to say. The sketch presented in figure 46, *a*, indicates the order in which the flakes were removed. The size of the blade decreased as the work went on (*b* and *c*). This is shown also by the width of the flutings (*a*, *c*, and *d*). In *d* we have the exhausted nucleus after all the knives that could be made from it were removed. The upper end no longer had sufficient surface to permit of the necessary flaking impact. The flakes at this stage became so attenuated (*e*) as to be of little practical value, and the slender fluted shaft was discarded or reshaped into some form of implement or ornament. The exhausted nuclei occur very frequently on inhabited sites.

Besides the rejectage of nuclei-making and the hammerstones already referred to, a few other varieties of artifacts were found on the quarry site. In some of the heaps of refuse there were found a number of scraper-like objects, made by taking a long, thick flake with one smooth, concave side, and removing a few chips around the convex margin of the wider end, giving a scraping edge. One of these is outlined in figure 47. Whether the specimens encountered are only rejects of scraper-making or are implements made and used upon the site, it is difficult to say. Resembling the scrapers somewhat in general form are numerous long, curved flakes of triangular section (figure 48), the convex sides of which have been roughly flaked off, as if for some definite purpose.



FIG. 47—Examples of the scrapers found in the shop refuse.



FIG. 48—Modified flakes of triangular section found in the shop refuse.

Strangely enough, there seems to be an almost total absence on this site of the incipient leaf-blade forms from which knives, spearpoints, and arrowheads were usually specialized. Long and patient search brought to light only one specimen, the fragment of a large reject showing the bilateral flakings characteristic of so much of the shop-work of the United States. In the vicinity of the quarry some large blades have been found, and spearheads and arrowpoints are common, indicating that the manufacture of this

class of implements was carried on somewhere in the general region.

It is to be expected that on a site of this class, where many workmen were assembled from time to time and doubtless for considerable periods, evidences of domestic life would be common. The occurrence of numerous remains of houses has already been noted, and it remains only to add that mingled with the *débris* of the shops are many fragments of earthenware—of vessels no doubt used for carrying water and preparing and serving food. The fact that this pottery is identical in paste, shape, color, and decoration with the ancient ware of Tenochtitlan indicates with sufficient clearness that it was the Aztecs who conducted the remarkable mining operations of the state of Hidalgo.

THE OBSIDIAN RAZOR OF THE AZTECS

BY GEORGE GRANT MACCURDY

In the Thirteenth Annual Report of the Bureau of Ethnology, page 59, the following statement is to be found: "The obsidian flakes of the Aztecs resemble the flint flakes of our ancestors, not so much because the ancient Briton resembled the Aztec, as because the *fracture of flint is like that of obsidian*." The fracture of flint is like that of obsidian in that both break with what is called conchoidal fracture. But there are different degrees of conchoidal fracture, that of obsidian being finer and possessing an accompaniment which that of flint does not have. The aim of this paper is to describe the distinguishing features of obsidian fracture, to seek an explanation for the same, and to show that to them is due, in a measure at least, the excellence of obsidian as a material for knife- and razor-making.

To compare flakes and nuclei or cores only, the curves in obsidian are more delicate and graceful than those in flint. Flints differ in quality among themselves; so do obsidians, depending especially upon their homogeneity. There seems to be a stiffness in the flint flake; it resembles the arc of a more or less rude circle. On the other hand, the curve in the obsidian flake (figure 49), beginning with the percussion end or base, is first sharp, then, for the greater part of its course, very gentle indeed, and lastly, sharp again—somewhat sharper than the initial one. Corresponding phenomena are observed in the cores.

In addition, the obsidian fracture possesses a feature not found in that of flint. If the edges of an obsidian flake on its nuclear or inner surface be examined carefully with a pocket lens, or even with the naked eye, several series of parallel lines or markings of varying length and remarkable for their regularity are easily

distinguishable (figure 50). All end in one direction, uniformly at the edge, which they meet at an angle of about 45° . They point toward the percussion end or base, curving gracefully in their

courses until the longest series comes to take a direction almost parallel with the edges of the implement. The longest lines are distributed regularly at intervals of about one-fifth of a millimeter. Other sets of lines of varying length fall in between with astonishing regularity until, at the edges, a space between two lines measures not more than one-fortieth of a millimeter.

The same phenomenon may be seen on the outer or raised surface of the obsidian flake; not along the cutting edges, however, but along both sides of the median ridge as seen in another view of the same instrument (figure 51). The back of this flake is composed of three sur-

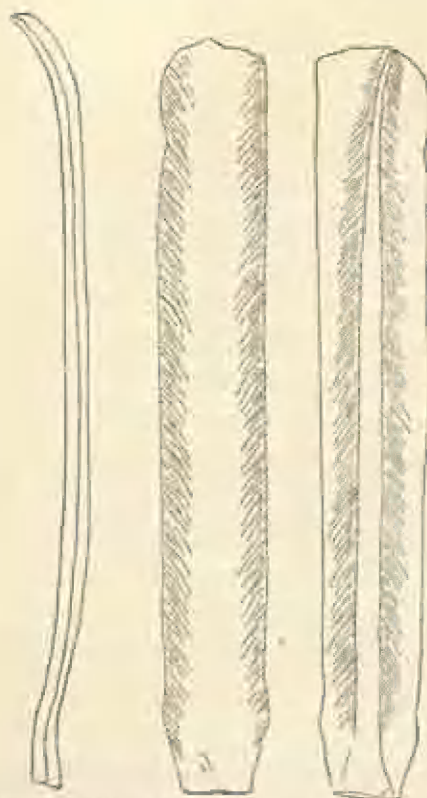


FIG. 50.—Obsidian flake, edge view. Mexico. (Cat. No. 252.11, Yale University Museum.) $\frac{3}{4}$ nat. size.

FIG. 51.—Obsidian flake, view of inner surface. Mexico. (Cat. No. 252.12, Yale University Museum.) $\frac{3}{4}$ nat. size.

FIG. 52.—Obsidian flake, view of outer surface. Mexico. (Cat. No. 252.13, Yale University Museum.) $\frac{3}{4}$ nat. size.

faces of fracture, each formed by the removal of an earlier flake from the parent core (figure 52). Surface *a* fits the median portion of the inner surface of the eldest flake represented here, and does not show the minute parallel lines of fracture. The surfaces *a' a'* fit a portion of the inner surface of

the two next eldest flakes of this group, and have the lines of fracture corresponding to those which marked the inner surface of the latter along their edges. The life-history of a nucleus may be read in these minute markings, the presence and disposition of which reveal the relative ages of the flake-scars (figure 53, Nos. 1 to 5), that marked 5 in figure 53 being the youngest.

The phenomenon of these delicate markings is due to what seem to be multitudinous planes of fracture parallel to one an-

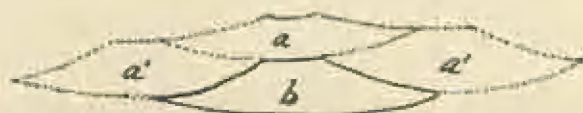


FIG. 53—Obsidian flake, cross section. Mexico. (Cat. No. 256.11, Yale University Museum.)

other, penetrating, on the one hand, the core and, on the other, the flake, probably at right angles to their common surface of fracture.

If that be so they would bear a striking analogy to the marginal crevasses of a glacier (figure 54), however inappropriate may seem the comparison of objects in the sizes of which there is such great disparity. The resistance at the sides ($g'g'$) of a glacier and the more rapid flow at the center together make crevasses ($c'c'$) pointing obliquely up-stream at angles of about 45° . The direction of the pull ($p'p'$), or greatest tension, tending to produce the fractures is oblique toward the center, down-stream. Hopkins has shown that this pull is strongest theoretically when it makes an angle of 45° with the sides of the glacier, and therefore the crevasses are at 45° with the sides up-stream.¹

The force in the glacier is gravitation, that in the obsidian flake is percussion. By the percussion the particles of the mass of the flake would be set in motion. The movement in line with the direction of the applied force, that is to say, along the axis of the flake, would be most rapid. The sides tending to lag behind

¹ Dana, *Manual of Geology*, fourth ed., p. 245.

would produce a tension to be relieved only by fractures at right angles to the direction of that tension. Here again the direction of the tension is oblique toward the center, "down-stream," and

is strongest when it makes an angle of 45° with the sides of the flake, which it does apparently near the margin, for there the transverse fractures are most numerous, as might be expected—make angles of 45° with the edges and point obliquely "up-stream," to use the glacial terminology.

The obsidian flake represented in figures 49–51 is an Aztec razor from the anthropological collections of Yale University Museum. The parallel lines of fracture give it a feather-edge—an edge similar to that produced on a steel razor by grinding and one almost as straight as that of a razor for the greater part of its length. With such an edge the obsidian flake was by far the most efficient tool throughout the Stone Age for the uses to which our modern scissors, knives, and razors are put. It is doubtful if the Bronze Age or the early Iron Age

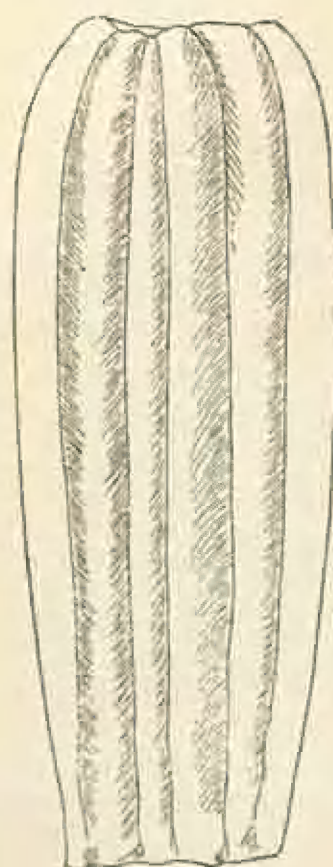


FIG. 51.—Obsidian razor, Mexico. (Cat. No. 1222.21, Yale University Museum.)
N. nat. size.

even furnished an instrument that could compare with it in point of sharpness. The principal advantage possessed by razors of bronze and iron was that they could be resharpened indefinitely. An obsidian razor, on the contrary, is easily dulled, and the edge once gone is lost forever. This disadvantage was more apparent than real in Mexico, at least, where obsidian of excellent quality was plentiful

and the natives, according to Clavigero, were so skilful in the manufacture of obsidian knives and razors that a single workman could produce a hundred per hour. So much has already been written concerning the methods of producing flakes that a description in this connection would be mere repetition.

The Aztec razor mentioned above was tried by the writer upon linen, woolen, and cotton cloth, paper, parchment, the hair, and the beard with very satisfactory results. It cut cloth, for instance, in any direction without tearing and with the expenditure of a minimum of force, and was equally serviceable when employed as a knife or a razor. Scissors were unknown in Mexico before the advent of the Spaniards, hence obsidian flakes must have been freely used by tailors and bookmakers as well as by barbers.

Cortés, in describing the grand bazar of the City of Mexico, speaks of barber-shops where barbers shaved the head with obsidian razors. The Mexican word for obsidian is *istli*, which means "barber's razor." The Mexicans as a race did not have heavy beards, but the masses among the male population shaved their heads with the exception of a small tuft near the crown. In a land where the clergy, the nobility, and the army alone had the right to wear the hair long¹ (and this was true of both Mexico and Peru), the demand for obsidian razors must have been great. According to Solís, the Mexicans also made use of razors of bronze, but they seem to have been rare in comparison with those of obsidian. It would not require a great stretch of imagination to picture the ancient Aztec with his obsidian razor taking a morning shave before a mirror of obsidian, as mirrors made of polished slabs of that substance are not infrequently found.

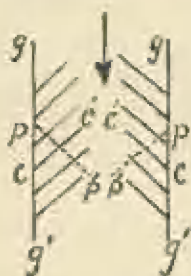


FIG. 34.—Plan of marginal crevasses of a glacier (after Dana).

¹ Spire Blondel, "L'Art capillaire chez les peuples primitifs." *Revue d'Ethnographie*, t. VI, p. 420.

PUEBLO RUINS NEAR FLAGSTAFF, ARIZONA. A PRELIMINARY NOTICE

By J. WALTER FEWKES

INTRODUCTORY NOTE

In April, 1900, I made a cursory examination of the ruins near Flagstaff, Arizona, with a view to more extended future exploration,¹ finding this neighborhood, which of late has been neglected by archeologists, to be a most interesting field of research. The three types of Arizonian ruins, namely, (1) cavate rooms, (2) cliff-houses, and (3) pueblos, are well represented in this locality. The cavate rooms are burrowed in lava, generally in the tops or sides of cinder-cones; the cliff-houses in Walnut cañon are small but typical; the pueblos occur in well-preserved ruins near Little Colorado river, and are built of lava, sandstone, and limestone blocks. There are many examples of the third type of ruins in the cedars not far from Flagstaff, but it is to those near the Black falls of the stream mentioned that attention will especially be called. The ruins noted in this preliminary account are only a few of many ancient habitations dotting the country about Flagstaff. The paper will deal only with the more striking examples of two of the types mentioned.

I will consider in sequence the cavate rooms and the pueblo ruins, passing, for the present, the cliff-houses of Walnut cañon which have been so frequently described by others. The hitherto undescribed ruins near Black falls, to which especial attention is now given, will, for convenience, be divided into three groups, called *A*, *B*, and *C*.

¹ This work was done under the direction of the Bureau of American Ethnology. It is my intention later to excavate the ruins herein described.

Sitgreaves, in 1852, seems to have been the first writer to refer to the ruins about Flagstaff and along the Little Colorado. He figures one of the ruined pueblos near the cascades or falls,¹ which is of the same general character as those near Black falls, which he probably did not visit. Major Powell, in 1885, visited and later described² the cliff-houses, the cavate rooms of the volcanic cones, and several pueblo ruins north and northeast of Flagstaff. He did not visit the Black Falls ruins, which are undoubtedly similar to some of those which he describes. Since Powell's description the literature of the Flagstaff ruins has been confined mostly to popular newspaper articles, archeologists seeming to have paid little attention to this neighborhood.

CAVATE ROOMS

The cavate rooms near Flagstaff are excavated in the lava, or volcanic breccia, and may be classified as (1) cavate rooms with vertical entrances, and (2) cavate rooms with lateral entrances. The former are well illustrated by the "old caves," nine miles east of Flagstaff; the latter by the "new caves," twelve miles from the same place, in the same direction, and by cavate rooms half a mile west of Turkey Tanks. These two types of cavate rooms are similar, and their former inhabitants were apparently of the same culture.³ Major Powell learned from the Indians of Cataract cañon that the ancestors of the Havasupai occupied these cavate houses, and he states that "they doubtless lived on the north, east, and south of San Francisco mountain at the time this country was discovered by the Spaniards, and they subsequently left their cliff and cavate dwellings and moved into Cataract cañon, where they now live."

The fragments of pottery seen about the entrances to these

¹ Probably the "cascades" were the Grand falls, miles above the Black falls.

² See *Seventh Annual Report of the Bureau of Ethnology*, 1891.

³ The relationship of the inhabitants of the cavate rooms to modern survivors will be discussed in a final report. Both the new and the old caves, by reason of their proximity to Flagstaff, are often visited by tourists.

caves are identical with those found near the pueblo ruins in the neighborhood, and there is no doubt that the cave inhabitants had burrowed in the lava as the most practical means of constructing habitations in this neighborhood. Free walls are found in combination with the caves, but these walls, save that they are built of lava, have no distinctive characteristics. This would indicate that the builders simply utilized readily available building material and took advantage of peculiar geological conditions.

OLD CAVES

The "old caves" lie near the top of Old Cave mountain, about nine miles north of east of Flagstaff, and cover an area of about five acres. On the top of this height there is a level space which was surrounded by a rough wall made of volcanic breccia, from which a good view can be had of the surrounding country. The caves are found on the southern slope, and were excavated in a conglomerate of cinders or volcanic breccia which bears every evidence of having been erupted from a crater or blowhole (plate XVI, *a*). Clambering over the rough lava blocks one finds everywhere on the surface the remains of walls, often continuous, indicating former rooms. In places there are level spaces which seem to have been plazas, and the entrances to the caves often open vertically from these levels into the subterranean rooms. At other points it would seem as if these rectangular rows of walls were continuous, but there is no visible evidence that they had roofs, which, however, may have existed in former times. In fact, the old caves show combinations of underground cavate rooms with free walls above, and when inhabited the settlement must have looked like a collection of low, one-story rooms continuous for several hundred feet. We may therefore call this cluster of cavate rooms a pueblo in which each room above ground has a corresponding subterranean chamber hewn out of volcanic breccia.

One of the best-preserved and characteristic rooms of the old caves, with a vertical entrance, is shown in the accompanying



a—Type of the "Old Caves"



b—Type of the "New Caves"

CAVATE DWELLINGS NEAR FLAGSTAFF, ARIZONA

plan (figure 55). It will be seen that there are two subterranean rooms, *a* and *b*, each of which is entered by an opening in the roof, indicated by a dotted line. Room *a* measures 12 feet each way, and the entrance measures about 6 feet. This entrance has a square enlargement, or chimney, on one side, which extends to the floor of room *a* and has perpendicular, regular walls.

At one corner of room *a* there has been hewn out of the lava a small recess (*e*), the floor of which is lower than that of the room. There is also a small recess (*f*) at one side of the chimney.

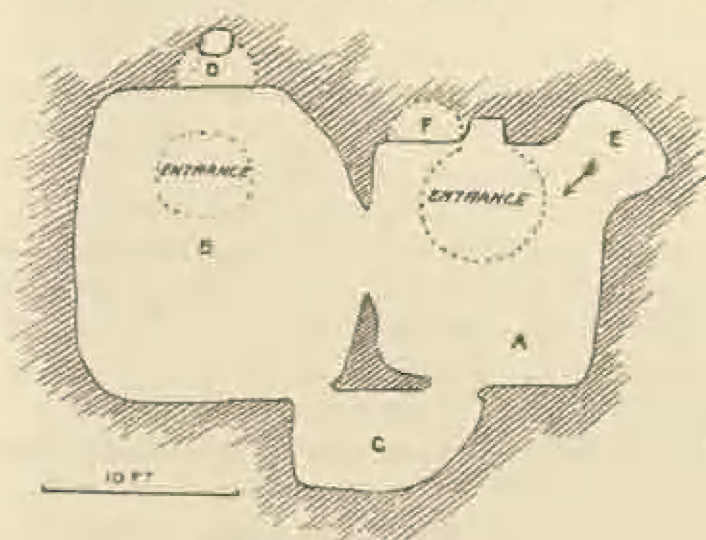


FIG. 55.—Plan of an "old cave" dwelling.

Room *b* is larger than room *a*, being about 16 feet square. It communicates with the latter by an opening or broken doorway, and has an opening through the roof. The floor is somewhat lower than that of *a*. A recess (*d*) on one side of this room also communicates with the outside by a small opening which bears the same relation to room *b* that the flue (*f*) does to room *a*.

Room *c* is an oblong, irregular, subterranean chamber, 5 by 7 feet, with passageways into rooms *a* and *b*. The opening into *a* is almost perfectly square, that into *b* less regular. Its floor is several feet lower than the floors of the other two large rooms in

this cluster. There are evidences of clay plastering in several places, and apparently the floor, walls, passageways, and possibly the roof, were smoothly finished. This plastering, however, has fallen, exposing the rough lava corners.

NEW CAVES

The mountain in which the new caves occur is about three miles west of Turkey Tanks, or about 12 miles east of Flagstaff. This height is interesting from a geological point of view, it being a section of the rim of an old crater, as may be seen from its summit. The remaining portion of the crater rim, or that on the eastern side, has been eroded into hills, the relations of which to the crater are recognized only by their positions. The highest part of the rim, and that in which the caves are found, is the western wall of the crater, which, with an adjacent southern section, forms a crescent connected by a ridge of less altitude. The more northerly of these elevations is the higher, and the cavate rooms occur on its eastern side.

Climbing the mountain from the west, the ascent, though steep, is not difficult, the trail passing stunted cedars over a mass of cinders. In the depression between the two hills which form the crescent, we find rows of volcanic breccia arranged in rectangular and other forms suggesting a reservoir. From this point the ascent becomes more difficult, and as one reaches the top of the higher hill he finds himself on the rim of a former crater. On the east the rim rises almost perpendicularly, and its walls on that side are outcroppings of exceedingly rough cinder conglomerate. In this almost perpendicular wall, facing what may have been the middle of the former crater, tier upon tier of cavate rooms, irregularly arranged and most difficult of approach, have been excavated. The crest of this as well as that of the adjacent lower section of the crater rim is capped by artificial walls of considerable height, indicating former houses. The whole aspect of the place is one of desolation, and the lava appears as if it had been molten but a

few generations ago. It may have been great stress of danger which drove the aborigines to seek homes in this forbidding locality.

TURKEY TANK CAVES

About half a mile west of Turkey Tanks, or about fifteen miles east of Flagstaff, there is a collection of cavate rooms with lateral entrances arranged in tiers. These caves, although not so numerous as the new caves, are comparatively well preserved. They are situated a short distance to the left of the road from Flagstaff, on the uplifted outcrop of what appears to be an old volcanic blowhole, and are confined to the northern side of the depression which marks the former place of eruption (plate XVI, *b*).

The outcrop on this side of the depression is composed of alternate layers of hard lava and volcanic breccia. The former would tend to resist any working with primitive implements, but the latter could readily be excavated with stone tools. The average thickness of the layers is about eight feet. By the excavation of the breccia the layer of harder lava above it has been undermined, and at present has fallen in places, filling the rooms or closing their entrances so that the form and dimensions are no longer determinable. As the layers are uplifted, vertical entrances into these cavate chambers are absent, the doorways entering horizontally from the side of the cliff. There are at least three tiers of these rooms, corresponding with the volcanic strata.

In the construction of some of these cavate rooms there is a combination of stone walls and excavated chambers, the lateral separation of the rooms having been made by a plastered wall of small boulders brought from the bottom of the adjacent depression. Apparently, also, walls formerly existed in front of the entrances to the caves, but these for the greater part have fallen, and their outlines are difficult to trace except in small sections.

Entering by a side opening, we pass into a subterranean room, 12 by 10 feet, and 6 feet high, the walls and floor of which are

partially plastered. This room has five smaller rooms leading from it, which we will call *b*, *c*, *d*, *e*, and *f*. They average about five feet in diameter, and have their floors depressed about a foot below that of the main room, *a*. The entrances into these lateral rooms, especially that into *d*, are carefully made, are almost square, and when plastered, as there is good evidence that they once were, made good doorways. In fact, although the walls of most of these cavate chambers are now very rough, and the rooms seemingly desolate as places of habitation, they must once have been comfortable abodes, for the plastering made the finish almost as smooth as that of any wall which could be constructed.

Several of the rooms in which the plastering still remains have ledges and cubby-holes in which household utensils were doubtless kept. The similarity of these cavate chambers to those excavated in volcanic tufa in Verde valley is apparent. The material in which they occur is different, but the plan of the rooms is almost identical. Whatever peoples inhabited the cavate dwellings of the cinder-cones near Flagstaff and the tufa mesas of the Verde, their culture was not radically different.

RUINS NEAR BLACK FALLS OF THE LITTLE COLORADO

THE ENVIRONMENT

It has long been known that the banks of the Little Colorado and the neighboring mesas were sites of ancient dwellings, but exploration has been confined mostly to the upper part of the river and its tributaries. The numerous ruins along the stream from Grand falls to its confluence with Rio Colorado have been wholly neglected, but there is little doubt that future excavation will be rewarded with many novelties.

The Black Falls ruins have been known for several years to local amateur archeologists, and a considerable collection of ancient objects has been taken from them by Mr Benjamin Doney, of Flagstaff. Under his guidance several well-known residents of

that town, among whom may be mentioned Dr Robinson and Mr Jack, have visited and photographed them.¹ Herders and cowboys are acquainted with the ruins, and the former have cleared some of the rooms for use in winter.

The geological features of the region in which these three groups of ruins occur are instructive, but for present purposes one or two simple statements will suffice. The three well-marked formations—lava, sandstone, and limestone—have affected the appearance of the ruins. The black lava covers the red sandstone and limestone, forming great mesas or isolated buttes, the summits of which are crowned with ruins. The lava ruins have low, rough walls in which adobe mortar was not detected. The red sandstone formed a more tractable material, and the buildings constructed of it show fine masonry with adobe mortar. These ruins ordinarily stand on the brink of small cañons eroded in the sandstone, on isolated blocks of the same stone, or on ridges left by erosion. If these lava and red sandstone ruins were found in different localities they might be regarded as products of different peoples, but their existence side by side in this region shows that the slight differences in their architecture were due simply to the building materials employed. The irregular forms of the lava blocks made it impossible to construct from them the fine rectilinear walls which were possible with the well-squared blocks of sandstone and limestone. The erosion of the lava produces a coal-black, porous sand which as a rule covers the finer red soil derived from the sandstone and limestone. This soil, drifting into pockets or depressions in the surface rocks, afforded burial places for the inhabitants of the villages.

This region has few trees: there are no pines, and only a few cedars. It is the same sagebrush country which we find near the upper Little Colorado at Holbrook and Winslow.

¹ The author was guided to these ruins by Mr Doney. He is indebted to Dr Robinson and Mr Reed for kodak photographs, and to Mr Jack for measurements of several rooms.

The region is arid; it has now few springs, and those which were used in ancient times have probably been filled with drifting sand.¹ Volcanic agencies have left their mark on the whole region, causing in places deep fissures in the rocks into some of which a strong current of air continually passes, and from one of which emerges a roar as if from subterranean currents of water. One of the largest of these fissures is about two miles from the Tuba road, on the way to the ruins called cluster *A*; others are found in the rocks near *G* and *H* of this cluster, where their depth has not been determined. These crevasses, which are no unusual feature in the geology of this region, vary in breadth from a few inches to many hundred feet, and from a hundred yards to miles in length. When very broad they form cañons, which end abruptly or merge into "washes" as the configuration of the country may dictate.

GENERAL FEATURES

The ruins near Black falls are, as a rule, cubical in form, with rectangular rooms of one or more stories. Curved walls are rare, although in some instances the shape of the ruin follows the curvature of the mesa on which it stands. These ruins are built of both sandstone and lava, and the two varieties are found in close proximity, or within a few hundred feet of one another.

The sites of these ruins are ordinarily elevated, and it is not uncommon to find an entire mesa top either covered with rooms or surrounded by a wall perpendicular with the escarpment. The ground-floor rooms had no lateral external entrances, but where there were several chambers side by side they communicated with each other by doorways. In the case of two- or three-story houses

¹ I do not share a common belief that when these now-ruined structures were inhabited the precipitation was greater. In an arid region springs rapidly fill with drifting sand if not dug out repeatedly. The Hopi are obliged to clean out some of their largest springs annually.

it is probable that the ground floor was used for storage and was entered from the roof.

This is an architectural feature still retained in the old Hopi houses, but it has been somewhat masked by more modern buildings erected in front of them. The old houses of Walpi, Sichumovi, and Hano had ground floors which were entered from the roofs, to which one mounted by ladders, while entrance to the second story was gained by means of a side doorway from the roof of the first. Many of these old rooms are still to be seen at Walpi, especially around the plaza, and there are one or two examples in the villages of Sichumovi and Hano.¹ The oldest houses of Tusayan never had lateral entrances from the ground floor, but when the first story was occupied it was provided with a hatchway in the roof. This type of room, however, is rapidly disappearing, the majority of ground-floor rooms on the East Mesa now being provided with doorways in the walls; on the Middle Mesa and at Oraibi the number of ground-floor rooms entered by a side door is still smaller than on the East Mesa. It may safely be laid down as a rule that, whenever in the Hopi pueblos one finds rooms on the ground floor entered by lateral doors, the construction is new.²

The character of the sandstone and limestone of the Flagstaff region is such that, when the stone is fractured, slabs are produced which make possible the construction of excellent walls. Blocks of lava, however, have no flat faces, and when used as building material result in poor masonry, for the adobe mortar

¹ A good example of the ancient houses of Walpi, in which the lower story serves as a dwelling-room at certain times, is Saliko's home, near the Snake rock, and the row of rooms from Hensi's house to the *Molline*. The Flute house is also a fine example of this type. In Sichumovi the home of Putsche illustrates this ancient type, and there are several in Hano, of which Kalacai's house is a good example.

² I shall consider this architectural likeness of the ground rooms of ancient ruins to old Hopi houses in my final article on the Black Falls ruins, where plans will be given illustrating the relation of the ground rooms with lateral doors to the old rooms on the East Mesa. The ruins near Black falls have their ground-floor rooms like the old rooms of the Hopi pueblos.

readily washes from the joints and the walls soon fall. It is rare to find houses built of the latter material which now stand many stories high. The best rooms constructed of lava contain also sandstone slabs, which have strengthened their walls, as in the "citadel" of the Black Falls ruins, where blocks of sandstone were also used as lintels. None of the walls show evidence that the building stones were dressed after being quarried.

The highest walls of these pueblos as a rule were situated on the northern and western sides, the pueblos being terraced on the south and east. This arrangement was apparently adopted to secure sunny exposure.

In many of the ruins there are found, at the base of the mesa, on the southern and eastern sides, rooms of a single story which, from their position, we may designate basal rooms. They are now covered with débris, but were once protected by the overhanging edge of the mesa, suggesting cliff-houses, of which they may be a survival. These basal structures may have been used as granaries, but in none of them were remains of roofs found.

With the exception of group *B*, ruin *A*, most of the ruins show little evidence of long occupancy; few logs or beams remain in them, there are no extensive deposits of débris, and there is a lack of large quantities of pottery fragments such as are usually found about pueblos which have been occupied for many generations. The general indication is that these buildings were inhabited in comparatively modern times.

None of the rooms show marks of surface plastering, except those of group *B*, where it is confined to the interior of the walls, as is the case with the older Hopi buildings.

The size of the rooms is much greater than is ordinarily the case with very ancient ruins. No kivas were found, and it is believed that the religious ceremonies were held in the ordinary domiciles. No building had a roof intact, but in many instances the remains of the roofs and floors of the upper rooms were found in the chambers below.



a—Group *A*, The Citadel



b—Group *A*, Ruin *f*

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The fact that wooden beams occur so abundantly in group *B*, ruin *A*, implies that it was either the last house to be abandoned in this neighborhood or that the beams were taken from the others to this pueblo, and when it was deserted its inhabitants moved too far away to carry heavy objects with them. Some of the timbers in the modern Hopi houses are said to have been dragged from the Little Colorado, possibly from old ruins.

GROUP *A*

Group *A* includes a cluster of ruins which, as a rule, are small, and bear general similarity in construction. It is situated about fifteen miles west of Little Colorado river. Following the road from Flagstaff to Tuba to within about eleven miles of Tanner's crossing, after passing Deadman's flat, the visitor turns to the right, and, proceeding four miles eastward, finds himself in the midst of the group. There are no trails or wagon-tracks from the well-traveled Tuba road to group *A*; but the country is so level that one can readily go overland to almost any point. A castellated, truncated lava cone, the "citadel" of the group (plate XVII, *a*), can be seen soon after one leaves the Tuba road, and this prominent landmark gives the general direction of the ruins among which it is situated. From the top of this citadel all the ruins of group *A*, with one or two exceptions, are visible, and the visitor is advised to inspect it first, in order to determine the position of the surrounding ruins.

THE CITADEL.

The walls of the citadel are constructed of blocks of lava and sandstone, and cover the top of a truncated elevation. They are arranged about a level central court or plaza, the surrounding walls of which are best preserved on the western side. The hill upon which the citadel is built bears evidence of having once been a volcanic cone, and was a most advantageous place of refuge for the inhabitants of the neighboring houses, as it had a

commanding position, was difficult of access, and was well fortified. As some of the structures were of two stories, they appear to have been permanently inhabited.

Twenty-three small ruins were counted from this elevated position. For convenience of description these may be designated A, B, C, etc.

GROUP A, RUIN A

Ruin A of group A is situated at the base of the truncated mesa of the citadel; it is built of red sandstone, with a few courses of lava blocks, is 50 feet long by 12 feet wide, and contains five rooms arranged side by side. Although the house was evidently never more than one story high, the many fallen building-stones would seem to indicate that its walls were once considerably higher than at present. Few floor-beams or rafters were detected.

Near this ruin, at the base of the hill, are four walled inclosures, one above another, suggesting terraced gardens. Their low walls are composed of alternate rows of lava and sandstone. Near these former gardens is a depression which might once have been a reservoir. This ruin is the only one visited which was not built on an elevated mesa at or near the edge of a cañon.

GROUP A, RUINS B, C, AND D

There are remains of three houses, built of lava and sandstone blocks, on a small lava hill a few hundred feet north of the citadel. On the same elevation there is a circular wall which may have served as a fortification. Most of the walls have fallen, and it is almost impossible to determine the relationship of the former rooms. There are also some small ruins on a lava hill near the elevation on which B, C, and D are situated.

GROUP A, RUINS E AND F

A considerable distance from the last-mentioned cluster, but in the same direction from the citadel, there are situated two

conspicuous ruins visible from a considerable distance. One of these, on the top of a lava mesa, is built of the same material of which the mesa is composed; the other, situated at its base, is constructed of red sandstone. Near the latter, on a lava mesa, there are many pictographs, representing spirals, frogs, snakes, and unknown figures. There is much broken pottery near ruin F.

GROUP A, RUINS G, H, I, AND J

These ruins, especially G, H, and J, are among the best preserved of all those in group A. Ruins G, H, and J are constructed of limestone, and are situated on the brink of a cañon, at the bottom of which, near the first mentioned, are mounds indicating the site of I. The walls of G, H, and J are well preserved and show some of the best aboriginal masonry in Arizona.

Ruin G had two rooms with walls rising twenty feet from the rim of the cañon. The lower courses of the walls are much larger than the upper, as is true of others in this neighborhood. The level of the floors is indicated by courses of larger stones.

Ruin J (plate XVII, *b*) is the best preserved of all the ruins in group A, and presents exceptional features. It is situated on the left wall of a cañon, about forty feet deep and of the same width, which deepens and widens east of the ruin, and then narrows, forming a natural corral enclosed by cliffs. Eight good rooms were noted in that part of the ruin situated on the top of the cañon wall, and in the cañon below it there were several semicircular basal rooms, some of which were sheltered by an overhanging cliff. Similarly sheltered rooms are represented in many of the ruins in this neighborhood, but nowhere else are they so well preserved. There are no beams in place, but their former positions are shown in many walls by openings, indicating that when inhabited the pueblo had two, possibly three, stories. An inclosure which may been a ninth room is so filled with fallen walls that details of its construction or size could not be determined.

As none of the rooms have external lateral openings on a level with the foundations, it is naturally supposed that the rooms were entered by means of ladders and hatchways. There are a modern doorway and fireplace in one room, evidently of later construction than the walls of the rooms.

Perhaps the most problematical structures in this ruin are the small cysts in the cañon walls east of the entrance. A thin layer



FIG. 95—Plan of group A, ruin 1.

of softer rock has so weathered as to leave a horizontal crevice which at intervals is divided, by stones set on edge, into receptacles a foot or so deep. They were formerly closed by flat slabs of stone, only two of which now remain in place. These cysts were nicely plastered, and the slabs which closed them were luted in place with adobe. Nothing was found in them to indicate their use, whether as burial places for the dead or as bins for the storage of corn. Their number was considerable, but their size so small that their capacity could scarcely have been more than a few bushels. This is the only ruin in which such inclosures were found, and no theory is advanced as to their former use.

GROUP A, RUIN K

Ruin K, which evidently formerly contained several rooms, is divided into two sections and is situated on a high lava mesa

difficult of approach. The walls of the larger section inclose three well-preserved rooms and still rise to a height of about eight feet. Five feet above the base, the red-sandstone blocks of which the walls are built are replaced by a course of stone of lighter color, which forms a horizontal band around the ruin. The second section consists of a low, rough wall built along the edge of the cliff, inclosing a level space in front of the first section. There are isolated rooms in this inclosure, and a depression which may have been a reservoir. This ruin, like many others, consisted of dwellings and a fort for protection. There are instructive pictographs on the rocks near by.

GROUP A, RUIN L

At the base of the lava mesa on which the last-mentioned ruin stands, there is a ruin of red sandstone with five rooms and a foundation of unusual shape. A huge rock, cubical in form, has fallen a few yards from its former position in the bluff. Ruin L is built on the top of this detached block, and its fairly well preserved walls are separated from the bluff on all sides by a wide crevice. From a distance the ruin appears to be perched on the bluff, but closer observation shows its separation from the latter by an impassable natural moat.

GROUP A, RUIN M

This is an oblong ruin, rising from the side of a deep, narrow cañon, with walls consisting of alternating courses of large and small blocks of red sandstone. Some of the walls have fallen, but sections fully ten feet high still remain in place. There are evidences of five rooms, each two stories high, but most of the chambers are filled with fallen stones. The cemetery of this pueblo lies west of the ruin, where there are also remains of walls.

Small ruins may be seen near the road from group A to B, a few miles to the left. Their walls are in good condition, but no peculiar features were observed.

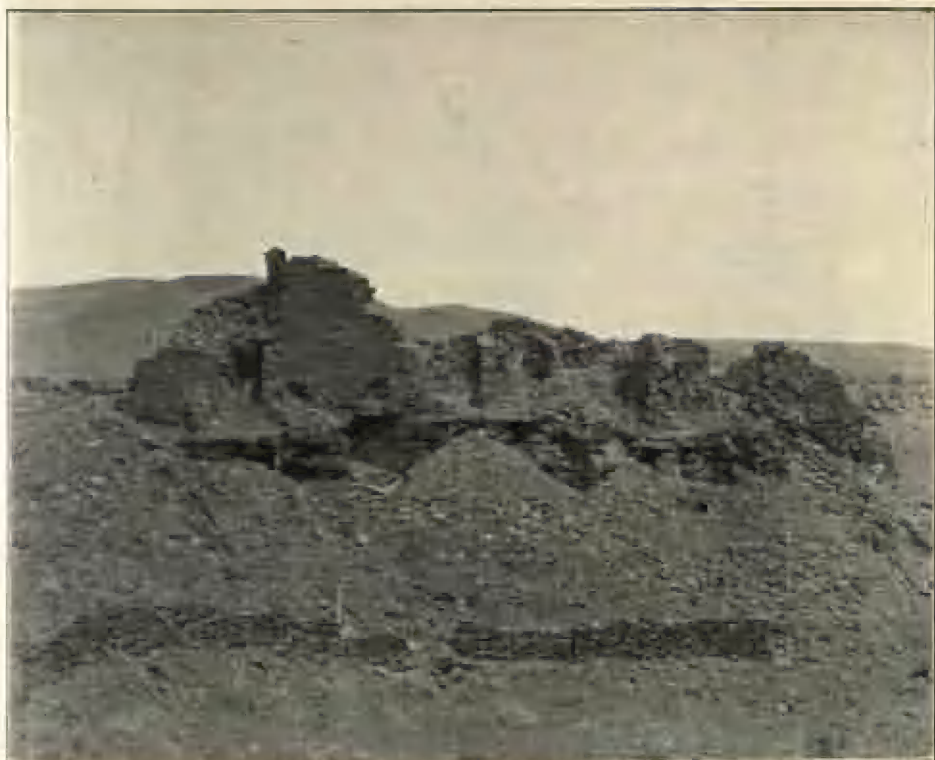
GROUP B, RUIN A

The largest of all the ruins in the Black Falls cluster, and one which bears evidence of having been inhabited for a considerable time, lies about 35 miles northeastward from Flagstaff and about 8 miles from the Little Colorado. This structure is built on a ridge of sandstone extending in a northeast-southwest direction, and consists of two large buildings of moderate elevation. On each side the ridge slopes gradually to a depression, the talus on the east covering a series of rooms, while on the west side, which is more abrupt, no rooms were discovered. The ruin is divided into two sections connected by rows of one-story rooms, the walls of which have fallen. Remains of a great number of roof- and floor-beams are still scattered throughout the *débris*. These beams are larger than those in any other ruin of the same size known to me (plate XVIII, *a*).

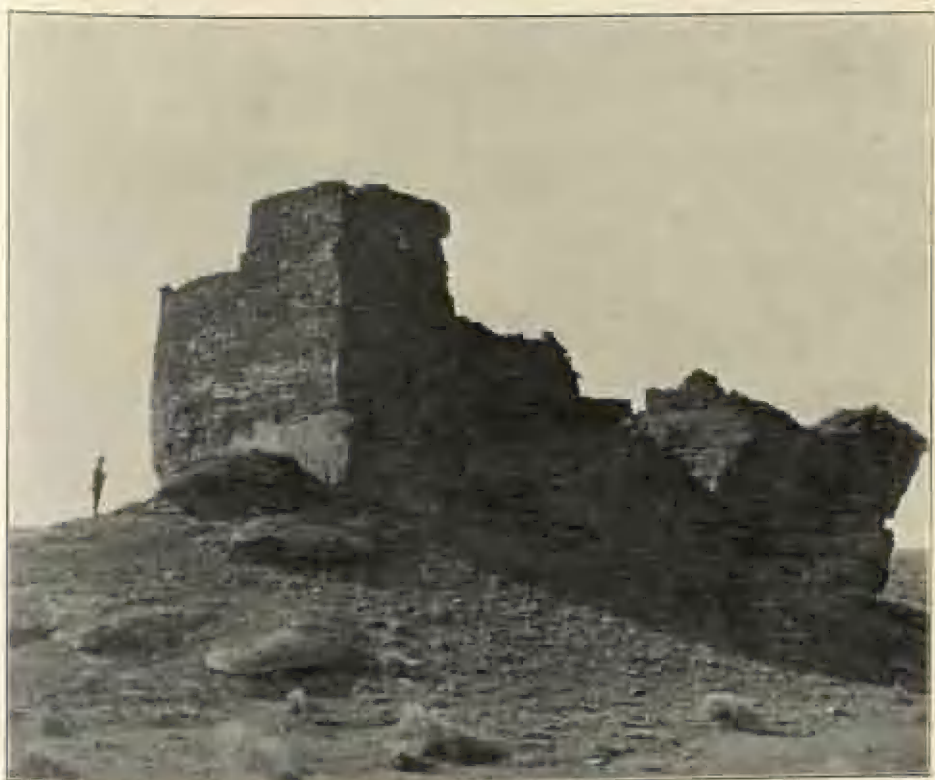
It is difficult to determine the original number of rooms in the first section of this ruin, as the tops of the walls have fallen, filling the chambers with *débris*. How many basal rooms were buried in the talus of fallen walls at the base of the mesa on the eastern side could not be discovered. Room *a* of this section is elevated on a rocky base about ten feet high. The chamber is small, and its walls have fallen on two sides. The *débris* has been cleared out of this room by Mr Doney, who found in it the desiccated remains of an infant wrapped in four well-preserved cotton blankets.

Room *b* is a small, narrow chamber, with good walls on three sides, but the fourth wall, which was situated on the edge of the mesa, has fallen over the brink (figure 57).

The ground-floor chamber of room *c* is formed by a gap in the mesa, from which a large cubical block has fallen. The walls of this chamber are the natural rock, to the surface of which adhere fragments of plastering. The beams of the floor of an upper room still rest on the edge of the gap, as in some of the kivas of Walpi today, especially those on the eastern edge of the mesa. The



a—Group B, Ruin 2, Section a



b—Group B, Ruin 2

RUINS NEAR BLACK FALLS OF THE LITTLE COLORADO

latter are built in a depression, the solid rock forming the walls on three sides, the fourth wall being of masonry.

Room *d* is buried under *débris*, and the broken beams which have pressed down on a plastered banquette are still visible. The reeds, straw, and impressed clay, which once formed a floor, may be seen in section.

Room *e* has two stories, and the floor-beams and rafters are still in place, but buried under *débris*. A high wall extends from



FIG. 57—Plan of group B, ruin A, section A.

the eastern wall of room *e*, crossing a depression in the cliff, which is bridged by logs serving as its foundation.

It seems within the bounds of probability that there were thirty rooms in the first section of group B, ruin A, including the basal rooms now deep beneath the fallen walls of the higher portion of the ruin. On the supposition that half of these were uninhabited, and that there were four persons to each room in the remainder, the first section of the ruin would have housed a population of 60. This, however, on the basis of the present population of Walpi as compared with rooms in the ruined pueblo, is a rather low estimate. Considering the population of the second section as about the same as that of the first section, and that of the connecting rooms as about 30, the approximate population

of the pueblos would have been 150. As compared with the size of Walpi the estimated population was 200.

The rooms of the second section, several of which are well preserved, are lower than those of the first section, and the detritus has covered the base so completely that the mesa is inconspicuous. Room *a* is nearly square, and is built on two rectangular rocks, the top of which forms the floor. One of these rocks forms



FIG. 58.—Plan of group B, ruin A, section A.

a side of the lower story of the adjoining room *b*, which is the best preserved of any in this section. The walls of room *b* are well preserved, and the chamber was occupied as a habitation by a herder a few winters ago. The room has a lateral doorway through the wall on one side, and in one corner there is a fireplace communicating with a chimney which will later be described. This room is 12 feet 4 inches by 9 feet 7 inches. In the second section many walls are still standing high above their foundations, indicating many rooms which are now filled with fallen débris in which beams, fragments of pottery, and other objects may be seen. Ten large rooms were counted, several of which had two stories. There were apparently basal rooms on the eastern side. The entire section is about sixty feet long (figure 58).

A chimney-like structure is one of the most conspicuous objects in this part of the ruin. It rises from the mass of débris

covering room *c*, and communicates with the fireplace in room *b*, but a vertical line from its top is 7 feet 10 inches from the nearest wall of the room in which the fireplace is situated. Whether this chimney is aboriginal or not, or whether it is a chimney at all, are open questions. Excepting its state of preservation and fine masonry, no evidence was found that it is of more recent date than the walls of the rooms. If an aboriginal chimney, which I doubt, its structure is unique. It may be a ventilator, comparable with the chimney-like structures described by Mindeleff in the kivas of Cañon de Chelly.

One of the finest reservoirs which I have ever seen in connection with a ruin was discovered near the bottom of the elevation on which ruin A of group B is situated. This reservoir is circular in shape, fifty feet in diameter, and carefully walled. It lies south of the second section of the group, and apparently had a break in the wall in line with the depression east of the ruin. It appears to belong to the same type as those reservoirs on the East Mesa of the Hopi in which snow and rain are collected for future use. There are instructive petroglyphs near group B, ruin A. A number of rock-etchings observed in a small cañon about a mile from ruin A were pecked in a perpendicular wall protected by the overhanging rim of the cañon. These petroglyphs were evidently made by the former inhabitants of this region, as one of the best examples shows the same design as that figured on pottery from the neighboring ruin. There were likewise butterfly, sheep or antelope, and other figures.

It would be quite impossible in this preliminary notice to give a complete account of the archeological objects which Mr Doney has taken from this ruin, but even a preliminary sketch would be incomplete without some reference to them. One of the most instructive objects is the desiccated body of an infant wrapped in coarse cotton cloth, allusion to which has already been made. This bundle was inclosed in three small cotton kilts which were later washed and found to be as "good as new." At the foot of

the infant was a desiccated parrot (?), some of the brilliant plumage of which is still to be seen. This bird has a prayer-stick tied to one leg, which makes reasonable the belief that it was a ceremonial object. Another interesting specimen in the Doney collection is the dried body of a dog which was found in one of the deep clefts in the rock near one of the ruins. This dog has a head similar to that found by the writer in the Chaves Pass ruin in 1896. There are also several fragments of beautiful cotton cloth and netting. Some of the specimens are embroidered, others are painted with circles and other geometric designs. A heavy wooden club, several planting-sticks, and other wooden objects, are to be seen in Mr Doney's collection. There are also many cigarette canes, some with woven handles, as well as seeds of cotton, squash, gourd, and corn, and many objects of shell, as tinklers, ornaments, rings, and bracelets. One of the best *Haliotis* shells which I have ever seen from a ruin was found in one of the graves.

There are also many large turquoise ornaments, some an inch or an inch and a half square. The many metates are made of lava, and are deeply worn as if from long use. The copper bell from a grave near group B, ruin A, is a remarkable specimen. It has the same form as the bells from Arizona ruins which I have elsewhere described, but on one side are ridges indicating eyes, nose, and mouth, apparently made of strips of metal soldered or brazed to the surface. It is not believed that this bell was the product of the former occupants of these now-ruined structures; more probably it was obtained by them through barter.

GROUP A, RUIN B

Across the depression north of ruin A, beyond the reservoir and on top of a mesa, there is a rectangular ruin consisting of two sections connected by low, parallel walls, which inclose a rectangular plaza. It appears that each section was composed of two single-story rooms. No beams nor other evidence of roofing are

now visible, but a considerable quantity of masonry has fallen into the inclosures. From the base of the mesa to the ruin an old trail can be traced by rows of stones on the eastern side, and on the same side there are likewise remnants of rooms. Graves were found among the rocks at the base of the mesa.

GROUP B, RUIN C

About half a mile north of group *B*, ruin *A*, there is a fortified mesa, with several rooms, some of which had two stories. The surface of this mesa is flat; the rim is round, the sides perpendicular but of moderate elevation. Most of the walls, which are built on the rim continuously with the mesa sides, have fallen, but sections of the houses, ten feet high, still remain, and the roof-beams and wattling may be seen in place in one or two rooms.

There are some fragments of broken metates made of lava, many potsherds, and a considerable pile of débris at the base of the mesa. Ruin *A* can be seen from the highest point, and the distant group *C*, ruin *A*, is plainly visible. The cemetery is on the eastern side, among the rocks at the base of the mesa.

GROUP C, RUIN A

This ruin, which lies forty miles by road from Flagstaff, and five miles due west of Black falls, is one of the most impressive masses of aboriginal masonry in this section. It is visible for many miles, and from a distance resembles an old castle as it looms from the northern end of an isolated, oblong, red-sand-stone mesa rising fifteen feet above the plain. The southern end of the mesa is higher than the northern extremity, and its rim appears to have been surrounded by a low wall, inclosing a plaza. Standing walls cover about half the surface of the mesa. On its eastern side, about midway of its length, there is a gap with perpendicular walls extending about fourteen feet into the side and almost bisecting it.

The following measurements of group C, ruin A, were made by Mr Jack, who has kindly placed them at my disposal:

The longer axis of the mesa bears N. 10° E., this bearing being obtained by using the face of the eastern wall of the highest building. The width of the mesa, at the middle point, measured from the rim of the overhanging cliff, is about 65 feet. The height of the tallest wall of room *a* is 19 feet above its foundation

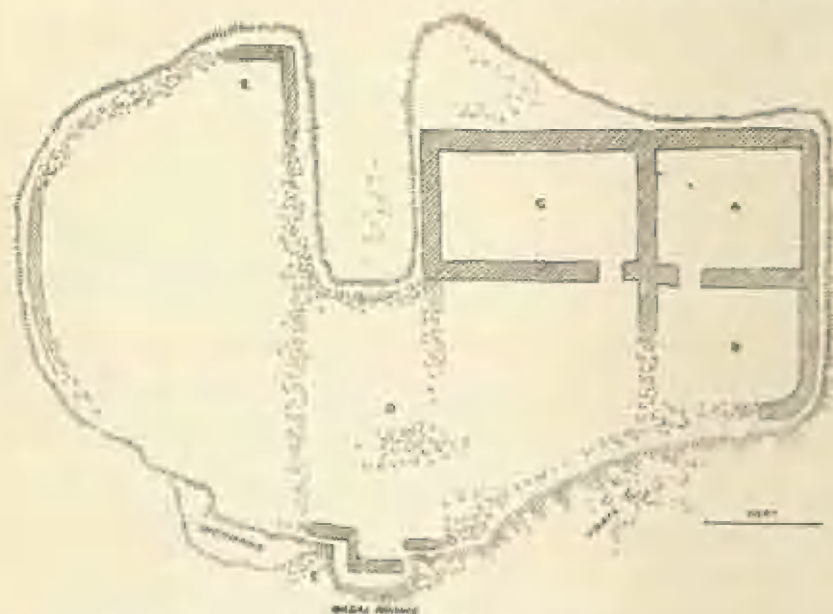


FIG. 52.—Plan of group C, ruin A.

on top of the mesa, which is about 10 feet high. The inside measurements of the same room are: Top of mesa to probable position of first floor, 7 feet, 6 inches; first floor to probable position of second floor, 8 feet; bench on which the floor-beams of the second floor rest to the top of the wall, 3 feet.

It may reasonably be concluded that the third story was as high as either of the other two, or about 7 feet 6 inches, which would make the original height of the wall about 23 feet.

The inside horizontal measurements of the northern and southern walls of room *a* are not the same. The former is 11 feet

4 inches, the latter 9 feet 9 inches. The eastern and western walls are 12 feet long. Room *e* is 17 feet 9 inches long, by 9 feet 7 inches wide.

Although the standing walls of this ruin are the best preserved of any of those examined, no wooden beams are found in place, nor are there remnants of the flooring or other débris in the rooms themselves. This absence is explained on the ground that at the time of the abandonment of the settlement, or later, the woodwork was carried away for use in new habitations. Possibly they were taken to ruin *A* of group *B*, or perhaps elsewhere. There is good evidence that this ruin once had large floor-beams, as indicated by openings in the walls in which they once rested.

Examination of the ground-plan (figure 59) shows that the whole surface of the mesa was once covered with rooms, the walls of which still extend to its edge. The highest walls, or those which surrounded room *a*, are of three stories. The two outside walls rise directly from the edge of the perpendicular cliff. There are several small openings at various levels, and holes in which rested the great beams that once supported the flooring are readily seen. At the corners of the rooms the masonry of the second story is bonded to that of the first and third, imparting solidity and strength to the high walls. There is no entrance or passageway between rooms *a* and *c*, but access was had between rooms *a* and *b*. Room *b* is almost perfectly inclosed by standing walls, formerly two stories high. The wall on the northern side has been overturned, and the many stones which have fallen at the base make an entrance at this point possible. As shown by the depressions in the walls, this structure once had two large beams in the roof of the first story, but they have disappeared. Room *e* has one story; its walls are complete on all sides, with an interior entrance into *d* and an exterior passageway. Rooms *a*, *b*, *c*, are conspicuous from a distance and join the greater part of the ruin. At intervals on the rim of the mesa other walls are found, some sections of which are four or five feet high,

but it is difficult to trace the walls of the rooms designated *d* and *e*.

This ruin also has cave rooms at the southern base of the mesa, which recall those of the other ruins in the Black Falls cluster. Plate XVIII, *b*, shows ruin A, group C, looking southward, and gives the general appearance as one approaches it from the west. The tall, square tower on the right incloses room *a*, and the lower wall extending to the gap is the side of room *c*. The fragments of masonry on the left of the gap are all that remain of the walls of room *e*. The mounds on the mesa to the left of the last are remnants of an encircling wall and of rooms which once surrounded the open space on the end of the mesa. The trail to the top of the mesa passes over the fallen walls of this room, as shown in the illustration.

The wall on the edge of the mesa, just above the large boulder in the foreground of this plate, is a part of room *d*, and at the bottom of the cliff, at this point, can be seen the walls of the basal rooms built at right angles to the cliffs. The level part of the mesa summit is broken by a single fragment of elevated wall—a part of room *e*. On this side of the mesa the upper part overhangs the lower, forming a cave, but no indication of rooms was detected here.

MORTUARY OBJECTS FROM GROUP C, RUIN A

The cemetery is about a hundred yards east of the ruin, and is small in extent. The mortuary objects found in a single grave opened at ruin A, group C, will give an idea of the burial deposits. The graves are oval, and consist of cysts made of slabs of stone set on end and covered with other flat stones. The upright stones were cemented together with adobe, the covering slabs being apparently luted to the edges of the uprights. These burial cysts were commodious, and in the one uncovered, the body, which was that of a woman, lay on one side, at full length, with the head at the wider end. To the right of the hips were

found a decorated food-bowl in which was a smaller bowl, a large and beautifully decorated vase, and a second small food-bowl. On the left arm was an armlet made of a *Pectunculus* shell identical with those found in the ruins of Homolobi. There was a remnant of a wooden prayer-stick, painted green, on the breast. Near the mastoid processes were square ear-pendants made of lignite covered with a turquoise mosaic surrounding a central red stone. These are beautiful specimens of turquoise mosaic, far superior to those now in use in the Hopi pueblos. The skeleton was in a very poor state of preservation, probably due to the character of the soil, which consists of cinder sand through which water readily percolates. There is a general similarity in the texture and decoration of the four pieces of pottery found in this grave. They belong to the black-and-white variety and have geometric ornamentation.

GROUP C. RUIN B

About two miles from the large ruin just described, to the left of the road to Schultze's spring, is a small, red-sandstone ruin standing on an isolated bluff. This ruin covers the top of the mesa and is conspicuous for some distance. The rim of the mesa overhangs in places, as the lower strata are much eroded, and the ruin can be entered at only one point. All the rooms of this ruin are single-storied, and most of the walls are high, although there is a considerable quantity of fallen stone in the rooms and at the base of the mesa (figure 60).

Room *a* is a semicircular inclosure, most of the walls of which have fallen. This is perched over a projecting table or platform, the rim of which the wall covers. The ground-plan of room *b* is nearly square, with well-preserved walls which rise directly from the edge of the mesa, which is steep on three sides. The interval between rooms *b* and *d* is strewn with stones, but traces of low walls can be seen. One of these walls is on the edge of the steep mesa; the other, parallel with it, almost

divides the space in halves. This is the part of the ruin which one first enters after climbing up the talus of fallen rocks. Room *d* is large, with well-preserved walls four or five feet high, and with a projecting platform on one side on which only obscure indications of artificial structures may be detected.

Room *f* is rather small, with walls built over a projecting platform, and resembling, from below, a bow window. Room *e* is

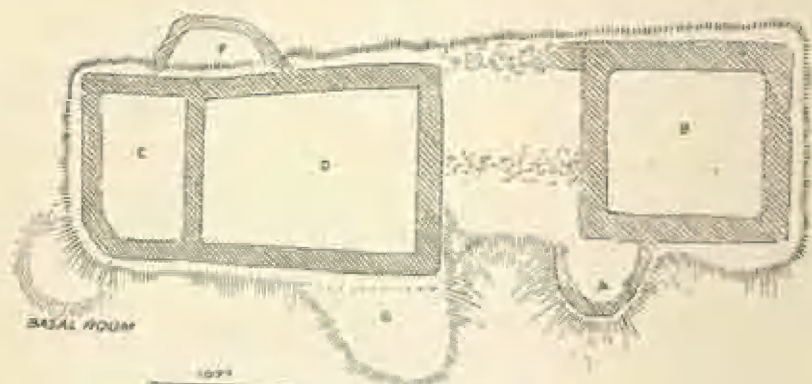


FIG. 60—Plan of group C, ruin 2.

well constructed; it contains considerable debris, and its sides are continuous with the perpendicular wall of the mesa. At the base of the cliff, just below room *e*, there is a low, almost circular wall, forming an inclosure somewhat similar to the basal rooms of some of the ruins already described. Although in general its architecture does not differ from many other rectangular ruins previously discussed, the overhanging platforms give a unique appearance to the structure. About 300 feet eastward were noted the edges of flat stones which indicate burial cysts. The whole length of this ruin is 46 feet, and the width, including the projections at *f* and *g*, 21 feet. The sizes of different rooms measured were:

Room <i>d</i> ,	10 feet 8 inches,	by	9 feet 10 inches.
" <i>d</i> ,	15 " 4 "	"	10 " 5 "
" <i>e</i> ,	10 " "	"	5 " 10 "

The following bearings were taken from this ruin :

Group C, ruin A, bears	N. 12° E.
Mt Agassiz	" S. 48° W.
Schultze's spring	" S. 56° W.

CONCLUSIONS

The preceding description will give a general idea of the ruins in this section. It is not possible to compare them with the ruins of Homolobi, where most of the walls have disappeared or have so fallen as to render the original plan unrecognizable. The difference in building material employed in the construction of the pueblos on Cheylon fork of Little Colorado river must have imparted a somewhat different character to the buildings erected there, but there is some likeness between the ruins at Chaves pass and the lava ruins near Black falls. In this connection it may be stated that there is also a large ruin near Homolobi built of lava blocks on a lava mesa.

The racial and clan kinship of the former inhabitants of these pueblos is somewhat problematical, but it is quite likely that the people were akin to the Hopi. This is shown not only by the character of the houses, but also by the pottery and various other objects found near them. Both legendary and archeological evidences point to the conclusion that the people who once inhabited the pueblos near Black falls came from the north, and were related to those who once lived in cliff-houses and other habitations on the Rio Colorado and its tributary, the San Juan. Hopi legends say that the Snake-clans formerly lived at Tokonabi, on the Rio Colorado, and that they migrated southward and built a pueblo about fifty miles west of the present Hopi towns, which they called Wukoki. This pueblo, it is said, still has high standing walls. The direction and distance of the Black Falls ruins from Walpi correspond pretty closely with the legend, and while it may not be possible to identify any single ruin of this cluster as Wukoki, the traditional Wukoki of Hopi legend is not far from that point. The tradition that these people came from the north

is supported by the close resemblance between the character and the decoration of their pottery and that of the San Juan ruins.

It might naturally be supposed that there would be a close likeness between the pottery of the Black Falls ruins and that of Homolobi, and that kinship once existed between the inhabitants of these two pueblos on the same river. Close study, however, shows marked difference, and I am led to the belief that while both were Pueblo people and therefore similar in culture, the clans which inhabited Homolobi were not the same as those which lived at the Black Falls villages. The clans which lived at Homolobi came from the far south, through Chaves pass, while those at Wukoki came from the opposite direction. Both eventually sought refuge in the Hopi pueblos, where their descendants now live together. The clans from Homolobi were the *Patki*, *Tuma* (*Küküte*), and *Tabo* (*Piba*), whose route to the Hopi towns was by a trail which goes directly north past the "Giant's chair." The clans from Wukoki were the *Tchia*, *Patuh*, and others who migrated almost eastward when they sought their home in Tusayan.

The traditions of these clans will be compared at length in a final report. The preceding pages give only a summary of many notes, and but few of many photographs obtained during a comparatively brief visit to these remarkably well-preserved ruins.

THE ABORIGINES OF THE CANARY ISLANDS

By ALICE CARTER COOK

EARLY HISTORY AND TRADITION

The first chapter in the history of Spanish colonial policy did not begin with the much-suffering Americas, where Cortés, Balboa, Pizarro, and Weyler have held their revels of blood. The earliest victims of these most Christian conquests were the remarkable aboriginal race of the Canary islands, which was so completely destroyed or assimilated by the Spaniards that not all the ingenuity of modern anthropological study has been able to solve the riddle of its origin nor to decide its ethnic relationships. Legend tells how a terrific cataclysm reduced a magnificent continent to the few isolated islands of today. Plato has described the sensations of a man on being first brought into the sunlight, having always lived in darkness; but the poet is yet to sing whose theme shall be the peasant of the inland mountain-tops suddenly become a dweller by the sea,—his craggy home sunk to the level of the ocean,—the thunder of the waves taking the place of forest silences. But scarcely less startling was the transformation wrought in the Canary islanders by the Spanish conquest. In the guise of Christianity they received slavery; for civilization, extermination; while their simple, strong, and wholesome life was superseded by the empty pomp and groveling superstition of the invaders.

Writers have carried the story of the archipelago back to times preceding Plato. In its isles have been located the gardens of the Hesperides, the Elysian fields, the remnants of the continent of Atlantis, the "Fortunate isles" of the old Romans, and even the Paradise of the early Christians. They were supposed to be at

the end of the world,—“there where the ocean refuses to carry vessels, where the sun buries itself in the waves, in the empire of night,”—and to constitute a sort of intellectual gymnasium where the minds of poets and philosophers performed remarkable feats of imagination.

Pliny says that the “Fortunate islands produce all the goods of the earth as all the fruits, without sowing nor planting,” and that “the pagans of the Indies believe that their souls after death fly away to these islands and there live eternally on the perfume of the fruits, and they think that there is Paradise.” But, he concludes, “to speak the truth, this is fable.”

Lucian writes: “Always in the fields of the Fortunate islands is the seat of Spring. The vines yield fruit twelve times in the year and every one of the months pays the tribute of its grapes. . . . In the place of wheat the ears shed bread prepared in their tops and crown, like mushrooms. The fountains are 375 of water, as many others of honey, and 500 of oil, balsam, and divers odorous liquors. And these fountains are the lesser, for of milk there are seven rivers and eight of wine.” In 1344 Jacques Ferrer made a curious map of the archipelago and declared that these were called Fortunate islands because they “abound in all—as grains, fruits, herbs, and trees.” From them the Phenicians are supposed to have brought the famous Tyrian purple dye which Solomon sought for the adornment of his temple.

Ideas of the people were as vague and exaggerated as of the country. Sallust tells us that Quintus Sertorius wished to go to the Fortunate islands “where were men no higher than some cubits and whose bones were flexible like nerves, and who were so strong that what they once held in their fingers could not be taken from them by the greatest force; . . . They had no hairs except on the head—no eyebrows, eyelashes, nor beards,” and the tongue was “split at the root so that in the same time they could ask with one half and answer with the other.” (What a boon this would be to modern children!) “They lived 400 years, and the

earth of its own good grace produced everything. When tired of life they dipped their faces in an herb, and after a short sleep, passed to the other life. The recently-born children were tied to birds, and those who survived the flight without nausea were allowed to live, the others being considered unfit to raise. They knew not what is discord, neither were they unhealthy or sick."

Francis Barret in *Natural Magic* says that "Guanche mummies are monsters, the result of marriages between devils and men. . . . They were dried, dead carcasses, almost three-footed, and so small that a boy might easily carry one of them on the palm of his hand, and they were of an exact human shape, but clear and transparent, and their bones flexible like gristles. . . . I considered that to this day the destroyed race of the Pygmies was there!" These dried corpses were brought by shiploads to Europe in the seventeenth century to be used in magic and medicine. A piece of Guanche mummy and the so-called "dragon's blood," also a Canary product,¹ were ingredients in the most powerful charms and quite indispensable in compounding the "philosopher's stone."

In contrast to the pygmy view, we read in other old books that the Fortunate islands were inhabited by a race of giants, one of whom is described as 14 feet high and having 80 teeth. M. Julien Daniello considers that the *Odyssey* is a compendium of Phenician travel, and that Polyphemus was a gigantic Guanche. Another writer says that every Guanche at one meal "took one little goat and twenty rabbits."

So fancy ran riot over this prolific field and the Spaniards did their utmost to augment the confusion of truth and fiction. They made no effort to preserve to history a knowledge of the customs, traditions, or characteristics of the race which they subdued for the glory of the church. The conquest was completed about the time of the discovery of the New World, and, very shortly after, the native families not exterminated had been absorbed by

¹ A resinous exudation from the so-called dragon tree, *Dracena draco*.

intermarriage with the victors and quickly lost all trace of their former habits of life.

Some rare old Spanish and French books which evaded inquisitorial vigilance in the fine library at Laguna de Teneriffe, contain much valuable information regarding the islanders which has hitherto remained almost unknown to English-speaking people.

The inhabited islands of the archipelago at the time of their discovery, as now, were seven in number; by name, beginning with the most easterly, Lanzarote, Fuerteventura, Grand Canary, Teneriffe, Palma, Gomera, and Hierro.¹ The natives had no communication with one another, for the use of boats was unknown. The only recorded exception is the story derived from the island legends that the knowledge of making fire by friction was brought to Hierro by a woman who swam from Gomera, 33 miles distant, on two leather bags filled with air. This is most significant and hardly reconcilable with theories of the original migration by sea from northern Africa; for what maritime people ever lost the knowledge of boats? Admitting the possibility for the settlers of one island, is it not curious that such a useful art should have been forgotten seven distinct times? This ignorance is to us perhaps the strongest argument in favor of the hypothesis that the present archipelago is all that remains of a more extensive continent. Moreover, the inhabitants of Teneriffe could not swim—a strange lack in an island people,—while those of Palma ate no fish and did not know how to catch them, and the methods of fishing on the other islands seem to have been independently developed. Bows and arrows were also unknown in any of the islands until the time of the Spanish conquest. All of these facts become less mysterious in the light of the submergence theory. The dwellers on the inland mountains of a vast country, if

¹ The Canaries were the only Atlantic islands which were inhabited at the time of their discovery, Madeira, the Azores, and the Cape Verde group having no aborigines. There are six rocky islets in the Canary archipelago, without water and unpeopled.

suddenly dropped, as it were, into mid-ocean, would be and might remain without means or desire to cross the unknown barrier of water. Have not the savage tribes in other lands inhabited a single valley for untold centuries, oblivious of the world beyond their mountain-locked home?

The residual origin of the Guanches, as the *Indigenes* of the Canaries are commonly called, is not, however, generally accepted. Nuñez de la Pena truthfully says: "There are many opinions concerning the origin of the Canaries and each upholds his own as best he can, and, of all, which is the most certain God alone knows." An old man replied to the conquerors who asked whence came his people, "Our ancestors have told us that God put us in this island and that He has forgotten us, but that from the east would come the light which should enlighten us." This the Spaniards, of course, applied to themselves and the wonderful gifts of civilization and extermination which they brought. Some of the medieval clerical writers would have us believe that we have here the descendants of the lost tribes of Israel or of the scattered builders of Babel. Others trace the genealogy of the islanders to Noah himself, whose sons and grandsons are made responsible for their colonization and even for their names.

RACIAL CHARACTERISTICS

It has been expected that cranial studies would serve as a key to the affinities of the Guanches, though here again there is evidence of long isolation, for Dr Chil claims to be able to recognize the inhabitants of each of the islands by the skull alone. In all cases this is of the dolicocephalic (Cromagnon) type. Crania of the same class are still found among the Basques, in the Landes of southern France, and especially in Africa. According to Henry Gilman, these islanders, in common with the moundbuilders and Peruvians of America and the neolithic people of France, had the custom of boring a hole in the top of the skulls of the dead that

the soul might readily pass in and out. We do not recollect having seen any such perforations in the skulls in Las Palmas Museum, where the best collection exists.

The skeletons of the primitive Canarians¹ are of a very old type, with the much-flattened tibia, such as occurs also among the men of Cromagnon and the ancient inhabitants of Wales, and the perforation of the bone of the arm which is not found in that of modern man. Professor Retzius concludes that there was close relationship between the Guanches and the Moors, Tuaricks, Copts, and the people of the West African coast and the Carib islanders of the opposite shores of the Atlantic; while Webb and Berthelot think that the islands, at about the time of the troglodytes, were occupied by a prehistoric race whose traces remain in the sepulchral caves. "Upon this race were grafted several others, — first Berbers of Libyan origin whose various tribes gave names to the various islands and who remained in the ascendancy in the five western islands. The Arab element afterwards gained the supremacy in Lanzarote and Fuerteventura." There was evidence of the existence of at least two distinct races in the great resemblance to each other of the people of the two most easterly islands and their difference from the remaining islanders in physique, customs, and language. Even in the one island of Teneriffe the swarthy men of the south seem to have little relationship with the blonds of the north. Dr Chil, on the contrary, is emphatic in his opinion that the Guanches were all of one race, "the real Dolman people such as they existed in primitive times," and "the most ancient race known," which, notwithstanding invasions by Libyans, Phenicians, and Romans, "preserved until the conquest some of its purity" and even today is represented by fine types with all of its distinctive characteristics. As to the degree of culture reached in historical times, students agree that it was that of neolithic southwestern Europe and northern Africa.

¹ "Canarians" is used for the inhabitants of all the islands, "Canaries" for those of Grand Canary, the latter being the customary Spanish designation.

LANGUAGE

Writing was probably unknown to the Guanches. Hieroglyphic cuttings, as yet undeciphered, have been found in Lanzarote, Fuerteventura, Palma, Canary, and Hierro, but it seems possible that they are the work of Phenicians who may have touched the islands for commercial purposes. The conquerors might easily have preserved the various languages, which would have formed valuable sources of information, but, careless of all not pertaining to personal gain or aggrandizement, they let slip the great opportunity. Some time after the conquest dawned the brilliant idea that a knowledge of the almost vanished tongues might prove valuable, consequently science and literature were enriched by fragmentary vocabularies of words spelled at the pleasure of the compilers. There is a story that one of the Roman governors of a North African province ordered the instigators of a rebellion with their wives and children to be deprived of their tongues and set adrift in an oarless boat. These mutilated families arrived at the island of Gomera, and the curious guttural language of their descendants, who are described as speaking as if they had no tongues, was supposed to have resulted from learning to talk from such dismembered ancestors.

The inhabitants of the archipelago had been so long isolated that the indigenes of one island could hardly be understood at all on some of the others, though Galindo and Viera state that the speech of Gomera and Hierro was identical, as was also that of Lanzarote and Fuerteventura, while captive Canarios were taken as interpreters to Teneriffe. From the lists collected from all available sources by Dr Chil, we have selected several words for objects necessarily familiar on all the islands. The names for kid, vulture, and *gofio* are practically identical. It is noteworthy that the name for "moon" in Palma, Teneriffe, and Lanzarote is so closely similar to the word for "month" in Hierro and Gomera (the year was reckoned by moons on several of the islands), while the Palma and Lanzarote name for month is merely a modification

of the same root. The table shows some other interesting resemblances and also indicates that a native of Hierro would not feel completely at home in Grand Canary. Yet community of origin is evident. The root of the word for "sheep leather" is evident in the Gomeran word for "leather skirt," and there is a common root in the word for "sun" on five of the islands. The word for "kid" (*chivato*) throughout the archipelago is apparently related to the Palma word for "sheep" or "goat" (*te quevite*,—*ch* being probably interchangeable with *que* as the representative of the *k* sound). The similarity between the word for "man" on Lanzarote and that for "son of," so common in compounds, on five of the islands is significant.

PHYSICAL CHARACTERISTICS—FEATS OF SKILL

The Guanches as the Europeans found them were of fine physical development. They had the keen eyesight and hearing of primitive peoples, but the senses of touch and taste were blunt. The peasants of today seem to have inherited these latter qualities, for they walk with ease over the stoniest of mountain paths, traverse fields of hot scoræ which burn the feet of booted Europeans, and eat with complacency viands much too highly seasoned even for the Spanish palate.

Esdrisi, in 1154, described the inhabitants of Canary as "white, tall, with long straight hair, the women of rare beauty." The chaplains who chronicled the adventures of Bethencourt, who led the first successful invasions, say, "Go over all the world and you will find in no part more beautiful people, neither better formed than those of these islands, men and women, and they are of great intelligence if they had one to instruct them." Father Galindo, on the other hand, voices what was evidently the Spanish idea: "As all the creation in the heavens as on the earth is subject to the will of God, when I would treat of the nature and of the inclinations of the Guanche race, I would regard them as of the inferior order, made to serve, because the divine will has declared

COMPARATIVE VOCABULARY OF CANARY DIALECTS

	LANZAROTE	FUERTEVENTURA	GRAN CANARIA	TENERIFE	PALMA	GOMERA	HIERRO
<i>Water</i>	ahemon		aho	ahof	adago		ahemon
<i>Milk</i>	aho		aromatian	tamo			achemen
<i>Barley</i>	tamozen	tamocen	gofio	gofio	gofio	gofio	tezzeres
<i>Toasted flour</i>	gofio	gofio	tahatan	hara	te quevite	juraque	gofio
<i>Sheep</i>	ciguena		aridaman	ara, axa	ciguena		juraque
<i>Goat</i>	chivato	chivato	chivato	chivato	chivato	chivato	chivato
<i>Kid</i>	bohuy					leather skirt	
<i>Sheep leather</i>	hahuy	hahuy				= tahayan	
<i>Vulture</i>	guirhe	guirhe	guirhe	guirhe	guirhe	guirhe	guirhe
<i>Stick</i>	tezeres	tezeres	magado				ganigo
<i>Clay pot</i>	guanigo	guanigo	son of = guan	guan	guan	ganigo	guan
<i>Man</i>	gunni		{ majec lia	magec	zeloy	lian	lian
<i>Sun</i>	afio				cel	cel	cel
<i>Moon</i>	cel				cela		alcorac
<i>Month</i>	cela				abara		
<i>God</i>	althos		achoran	achoran			

itself in this sense upon their souls and made them for servitude, in the same way that certain stars exercise their influence upon others." The chaplains of Bethencourt found in Fuerteventura "men of extraordinary stature and very much attached to and pertinacious in their laws and beliefs. . . . They can scarcely be taken alive, for they run like rabbits, and if one of them is captured and afterwards returns to his people, they put him to death." They were by some supposed to be a race of giants, and were, at least, a tall and strong people. Among the dead after a certain battle the Spaniards found a warrior nine feet in height, and the size of the tombs indicated bodies of large dimensions. Guardafia, king of the country, was a hero of heroes. Tied and held by three Spaniards, he broke his bonds, overthrew the men, and escaped. Thrice captured, he each time burst his chains and freed himself.

Many feats of strength and skill are recorded of the ancient race. Fray Espinosa, who wrote twenty-four years after the conquest, was shown an enormous stone which no European could lift, but which the Guanches were accustomed to raise above their heads. The Spanish told the following tale illustrative of their skill: Three soldiers, each with a basket of oranges, stood before an islander, who, with one hand, caught all the oranges thrown to him, while with the other he returned to each soldier oranges from his own basket. One Canario was so strong, and at the same time so agile, that no one with the force of both hands could prevent his lifting a glass of water to his lips and drinking it without spilling a drop. Another was taken to Seville, where, for a *cuarto* (less than half a cent), he would stand and dodge stones thrown at him from a distance of eight paces. It was a favorite sport in Canary and Teneriffe to "climb a cliff, which only to behold makes the spectator dizzy, and plant a great pole firmly at its summit as a memento." The Spaniards said that the devil assisted the natives in doing this in order that others who should emulate them might fall from the precipice.

and perish. A common feat in Lanzarote was the jumping successively of three poles, each held by two men as high above their heads as possible. The Gomerans were trained to fight from their earliest years. Little boys were taught to dodge clay balls without moving their feet outside of a small circle in which they stood. Later stones were substituted for the balls; then blunt, and finally pointed, javelins. They became so expert that they caught in their hands stones, darts, and arrows; wooden darts thrown by them passed completely through the bodies of their adversaries; stones flew as swiftly from their hands as from a harquebuse, and with a few strokes they dashed a Spanish buckler into pieces.

Wrestling was extensively practised in Lanzarote. Each of the combatants tied a cord around his waist, to which his opponent held fast while, touching shoulder to shoulder, they tried to overthrow each other. From infancy they practised carrying weights and so were ultimately able to throw with unerring aim enormous stones which their foes could hardly lift. Mock contests, which often became bloody, were a chief feature of the feasts of Fuerteventura, Teneriffe, and Canary. It is said that some of the champions were able to fight for two hours continuously. In order to strengthen themselves they oiled their bodies and embraced the trunks of trees for several hours each day. In Grand Canary when a challenge had been given and accepted, the parties obtained permission to fight from the council of nobles, and this was confirmed by the *faycan* or spiritual head of the land. Then, as in Teneriffe, the friends assembled in the place of public meetings, where councils were held, feasts celebrated, and justice executed. The contestants stood on flat stones about two feet long, at each end of a raised platform. They first threw stones at one another which were dodged without moving the feet; then, armed with javelin, flint, hatchet, or cudgel, they approached and finally came to close quarters. When the wounds became too severe, or the engagement had been sufficiently pro-

tracted, the chief of the judges called "Enough!" and the combat was suspended while the weary men retired to be refreshed with food and water brought by their friends. Then the fray was resumed until the judges called another halt, and ever after the opponents were good friends. If a cudgel broke, the fight ended and neither was considered victor; if the warriors were wounded, a rush beaten out until it became like a tow was dipped into hot goat-butter and applied to the injured spot. Two of Canary's renowned warriors once engaged in such a duel and fought long without advantage to either. Then one said, "You are valiant, I confess it, but will you follow me?" "I am ready," was the reply. Whereupon the first led the way to the edge of a frightful abyss and threw himself into the sea, followed instantly by his undaunted adversary. Such Spartan feats were not uncommon. A Palman chief, called Mayantiyo ("morsel of heaven") because of his great beauty, was wounded in battle; gangrene resulted, and he amputated his own arm at the elbow with a stone knife.

The Guanches ran like deer and climbed like goats, the women vying with the men in courage and hardihood. In 1443 a Portuguese squadron, returning from Africa, stopped to attack Palma. The shepherds fled and, when pursued, climbed the perpendicular cliffs with an agility that amazed and balked their foes, the women following the men so lightly that babies carried at the breast were not disturbed. Again Portuguese and Spaniards united in a raid on Palma. A Spaniard followed one of the women, who, turning, caught him in her arms and ran to a precipice whence she was about to throw herself and him when another of the enemy overtook her and cut off her legs. The people of Teneriffe did not know how to swim, but some of the islanders were excellent swimmers. The men of Lanzarote were accustomed to swim the nine miles which separated them from Graciosa—a rocky, uninhabited islet where they hunted sea-wolves. The woman who swam from Gomera to Hierro has already been

mentioned. In swimming, as in fighting, the hair was bound with green withes.

FOOD—COOKING UTENSILS

This great physical development was the accompaniment, and probably the result, of very simple living. In the words of Viera y Clavijo, the Canarians "show us men happy and robust, who preserved life to the greatest old age with very little art of cookery." The native fruits were mocans (*Visnea mocanera*), bicararos (*Canarina campanula*), a species of *Prunus* — all three peculiar to the islands, — blackberries, creces (*Faya fragifera*), and dates. The nuts of the native pine were highly esteemed, and figs, introduced before the conquest into Canary and Fuerteventura, multiplied rapidly. Galindo says that the fragrance of the numerous flowers of Palma was perceptible at night across the sea for a distance of three leagues, and there bees abounded. There was also much honey produced in Canary, and the palm trees yielded a so-called honey, more properly molasses, said to have valuable medicinal properties.

The staple foods were parched grain, milk, meat, and fish. Azmara wrote that the Gomerans lived "chiefly on milk, herbs, and fern roots, but do not disdain rats, pigs, lice, and ticks." His bill of fare has not, however, been duplicated by other historians. In 1341 four captives taken to Portugal from Grand Canary were described as "sufficiently civilized and less savage than many of the Spanish." When offered food and drink, they refused wine and ate grain from their hands. "They showed themselves of remarkable loyalty, for if one of them received anything good to eat, before tasting it he divided it into portions that each one might have a share." Grain was eaten in the form of *gofio*. This is wheat, corn, or barley, first parched and then ground fine by means of stone hand-mills such as were commonly used in the East in Bible times. It was eaten with milk, water, or honey. It was a food of primitive peoples, and formed a part of the

present sent by Abigail to David. It was the *polenta* of the Latins, and appeared at the feasts of the Homeric heroes. It is still the staff of life to the Canary peasants during a great part of the year, and many eat very little else during the times when fruits are scarce. The laborer goes to his work provided with a little bag of *gofio* and a large piece of home-made cheese. The meal and water were formerly put into the neck of a whole goatskin bag and kneaded violently upon a flat stone until a paste was formed. The modern man does the kneading between his hands. In Palma and Hierro they had no cereals,¹ but made a meal, which took the place of *gofio*, from the roots of the common brake. This was mixed with milk and butter to make a sort of bread. Another farinaceous food was obtained in Palma by boiling the seeds of a kind of *Chenopodium* in milk. This was eaten with a brush made of the macerated roots of *Malva*. André Thevet describes the Canarios as "the greatest eaters of meat that one can find. . . . They devour as much as six Scotchmen who were considered very great sarcophages." Bethencourt's chaplains declared that the inhabitants of Fuerteventura lived chiefly on meat and ate fat as we do bread. So many goats were there at the time of the conquest that 60,000 could be killed every year, each one yielding the "truly marvelous" quantity of thirty or forty pounds of fat. They had no salt, and their houses were filled with the fragrance of flesh hung there to dry. The people of Teneriffe are reported to have eaten little dogs, and those of Hierro the great lizards as large as cats with which the isle abounded.

The Teneriffians were the epicures of the islands and quite fastidious in their table customs. They washed the hands and

¹ This would seem to be a very effective argument for the truth of the supposed lack of communication between the islands, and certainly tends to strengthen the cataclysmal theory of their origin. It is easy to understand how a pastoral people living on the craggy summits of mountains might cultivate no cereals, but it is exceedingly difficult to believe that people knowing nothing of the use of boats could have been carried by accident to a new island or that, if equipped with means of transportation, they should fail to provide a food-supply. The Polynesians, for instance, have spread not one, but several, food-plants throughout the islands of the Pacific.

face after sleeping and before and after eating, and did not drink for half an hour after eating, thinking it bad for the teeth. They always ate meat alone, that the flavor might not be impaired. (This custom seems to have persisted, for today in this paradise of potatoes, tomatoes, and bananas, one is served to course after course of meat, with only an occasional microscopic sprinkling of vegetables.) *Gofio* followed the meat, and was eaten with salt and water, or with milk, or palm or mocan honey. Spoons of shell were sometimes used. Goat flesh dressed with hog lard and butter constituted a feast in Grand Canary. A pit in the ground was thoroughly heated by fire obtained, as on all the islands, by the friction of sticks; the animal was interred and the hole hermetically sealed. In Teneriffe the hole was covered with earth and a fire built over it. Lambs, in numbers proportioned to the guests, were roasted whole at feasts in Hierro. The company sat around in a circle on the ground and did not rise until all had been eaten. It is said that this Shaker-like custom forbidding wastefulness, perhaps at the expense of gluttony, is still retained. Urtusanstegui, writing at the end of the last century, speaks of great heaps of shells twenty feet long and several feet deep, accompanying the calcined remains of other feasts of the indigenes.

The cooking was done in pots made then, as now, by the peasants of the mountain sides. In many places the soft volcanic rock is riddled with holes, which, on closer inspection, prove to be the homes of nineteenth-century troglodytes, who make pottery, care for their flocks, and eat *gofio* much as their ancestors have done for untold centuries. The men bring clay, and their wives and daughters, seated on the floor of a cave lighted only by the entrance-way, fashion it into jars, bowls, and platters of forms identical with those found near the mummies in the sepulchral caves. Turf ovens now do the work of baking which was formerly accomplished in pits above which fire was built. Bent women who have worked in this way from early youth become so accustomed to the sitting posture that it is with difficulty they walk at all, and

their eyes blink painfully under the glare of full sunlight. Once a week barefoot peasants, usually women, carry the product on their heads (plate XIX, *a*) over the stony paths five or ten miles to the cities, where the largest pots of three- or four-gallons capacity, are sold for about four American cents apiece. A woman usually carries twelve such, so receiving nearly fifty cents as the proceeds of her Sunday trip.

The islanders made excellent butter, and the cheese of Lanzarote received high approval from the earliest invaders. The milk to be churned was put in a skin and suspended between two trees and knocked back and forth between two women standing eight or ten feet apart. This method is still practised in a rural district of Teneriffe, and it is not uncommon to meet a shepherd on the mountains carrying milk in a whole sheepskin. Butter was believed by the Guanches to have great medicinal virtue and was used both externally and internally. It was kept in pots buried in the ground and its efficacy was thought to increase with age. Urns of such butter have been found beside the mummies, and, according to the above theory, should have incalculable healing power.

Fish naturally formed a large part of the dietary of the coast-dwellers. When a school of fish approached Gomera, Canary, or Lanzarote, men, women, and children, armed with sticks, threw themselves into the sea, and, swimming beyond their finny prey, drove it to land where others waited with nets made of reeds and palm-leaves. The Lanzarotans killed fish with sticks, while swimming. They also built near the shore circular stone-walled pits which they emptied with their clay bowls at low tide, so catching the fish which had remained in them. A highly esteemed variety, which reached the length of a foot or more, was so slippery that it could not be held in the hand even an instant. To obtain this, the deep pools left by the retreating tide were poisoned with the juice of a species of *Euphorbia*. The stupefied fish rose to the surface and were caught in baskets lowered beneath them and

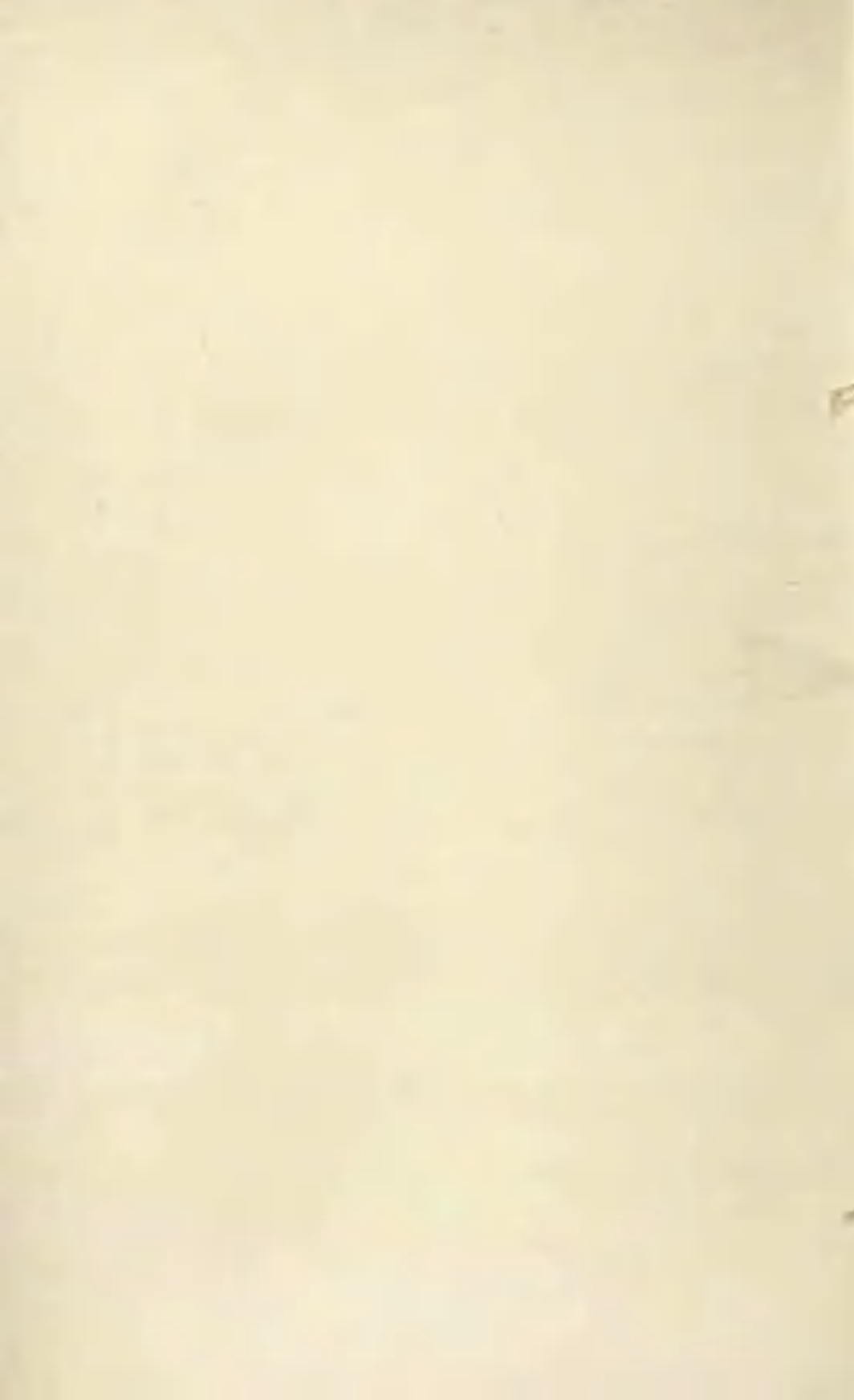


a — Women of Agaña, Grand Canary, carrying native pottery to market.



b — Aboriginal burial caves near the Gila road, Grand Canary.

SCENES IN GRAND CANARY



then freshened in unpoisoned water. Nets were sometimes made of the fibers of the dragon tree and of *Juncus*, and were provided with buoys, weights, and a draw-cord. These were thrown outspread into deep water, the cord was pulled, and the captors swam with their prey to land. Núñez de la Peña says that the people of Teneriffe (who could not swim) with little horns for hooks caught many fish, "thanks to the Lord who deprives none of the means of sustenance and aids with His omnipotence the most necessitous, even the barbarians, that they may know Him for Lord and Creator and Omnipotent." Hooks were also made of bone, and sometimes in Grand Canary a piece of bone was perfectly joined to a piece of hardwood by means of a thread of wool or gut. *Juncus* reeds or the branches of the wild cedar served as rods, and the cords were obtained from the palm tree. The Fuerteventurans harpooned fish along the shore, and the Canarios sometimes fished with torches by night.

Though the common drink of the islanders was water or milk, a fermented liquor was prepared from the fruit of the mocan, and in Hierro a kind of wine was made from the berries of *Cerasus*, and in Gomera from dates. In order to have enough milk in Teneriffe for the great consumption by the people, the kids were not allowed to drink much. The mammae of the mothers were smeared with the juice of a species of *Euphorbia*, which formed a kind of glue. In the evening the shepherds dissolved this and, when they had taken all the milk that they needed, the kids were allowed to have the remainder. In drought-devoured Fuerteventura cisterns were riches, and in Hierro water was so great a luxury that in contracts of marriages and in wills the gift of a cistern was more esteemed than a field. Sheep, goats, and swine were taught to quench their thirst by digging and chewing fern-roots. Some say they even drank salt water and sucked the leaves of asphodel. The precious fluid was also obtained by placing troughs upon the mocans at the origin of the first branches so that the dews and vapors deposited upon the leaves might run down into

the little reservoirs placed below. The story of the celebrated fountain tree which distilled sufficient water to supply the population of the whole island (about one thousand souls) during the dry season, would itself fill the limits of a magazine article. According to Viana, it "extracted from the arid earth the copious water which it afterward distilled." Teneriffe and Canary abounded in mineral springs, many of them celebrated today for medicinal qualities. A sulphurous spring on Hierro had such remarkable digestive power that when one had eaten "until he could no more," he had only to drink of it and, within an hour, his appetite would be as keen as before.

CLOTHING

Skin garments were in universal use except in a few regions where the poorer men wore only a loin-covering of palm-leaves or of skin, but even then the women were clothed, and tattooing with the colored juices of plants, a primitive form of dress, was probably practised. The custom of doffing the mantle or cloak in battle was probably responsible for the impression received by some of the invaders that the islanders were naked or nearly so.

The Palmans did not know how to cut skins, but considered them ready for use after having dried them in the sun. With this exception the Guanches were skilled tanners and tailors, those of Grand Canary excelling in these respects. A peasant told Dr Chil that the leather of his and his neighbors' shoes was taken from the skin-coverings of the mummies found in the caves near by, and that their sacks and pack-saddles, made from cloth from the same source, had been used in all sorts of weather for twenty years without detriment. Martinez de Escobar declares that some of these mummy-skins compete with Swiss kid in softness and delicacy. Simple designs were sometimes made by the combination of rectangular pieces of white and black skin. A kind of cloth was made from the fibers of dragon-tree roots and

from the leaf bases of palm, stained with vegetal coloring matters. Leather thongs were prepared with sharp stones: the tendons of sheep, goats, or swine, or fibers from the roots of the dragon tree served as thread and are sometimes so fine that a lens is necessary to distinguish the strands. Needles were made of fish bone or of the midrib of the palm-leaf or of wood hardened in fire. Dr Chil thinks that early Phenician navigators may have introduced the real article.

The clothes were cut by tailors who were specialists. Their implements were obsidian knives, which were used also for killing sheep, cutting wood, and shaving. The number and style of the articles of clothing varied in the different islands. It is recorded that Louis XIV performed the Canary dance in the Grand Opera, dressed as a Guanche, with bare legs, skin mantle, and royal wand; and we have gathered from our reading that the prevalent fashion resembled that which the widely circulated portraits of Robinson Crusoe have made familiar.

Considerable attention seems to have been given to the head-dress. The Canarios wore a bonnet made of the whole skin of a goat with the hair outside. The hind legs fell behind the ears, while the front legs were crossed under the chin. Sometimes bonnets were made of skin trimmed with feathers (perhaps at Easter time). The people who lived in houses braided the hair behind the back in a queue, while the troglodytes rolled it on the head or plaited it with colored rushes or put it up inside the bonnet and sometimes dyed it red with lye. The "king" of Lanzarote wore a fantastic, miter-like bonnet adorned with shells, which so took the fancy of the conqueror Bethencourt, that on receiving the title of "King of the Canary Islands," he adopted a somewhat similar crown. The commoners of this island trimmed their goat-skin bonnets with three feathers in front.

The Canario wore a cloak or jacket of skin with the hair side inward during the winter and outward during the summer, and under this a tight coat or shirt made of rushes beaten until soft

like flax and then woven, reaching to the knees and girded about the waist. Chains of beads of baked earth have been found with the mummies, and may have been either ornaments or currency or both, or they may have been counting-chains of simpler construction than those of Teneriffe where rings of different sizes represented respectively the units, tens, and hundreds.

The Canary peasants of the western side of the isle still have a curious costume, perhaps ancestral, consisting of a loose blouse and full, white, divided skirt which barely reaches the knee. They also wear low rawhide shoes, but no stockings (plate XX). In Teneriffe a long cloak of goat-skin, dressed and softened in butter, was gathered at the top and tied. The Laguna peasant and the shepherd of Canary now wear a coarse blanket which is shirred at the neck and falls below the knees. Is it a survival of the Guanche *tamarca*? The outer garment of the women was longer, and beneath it they wore a petticoat of the same material which covered the feet, "of which they took much care; for it was an immodest thing for women to disclose breast and feet." They wore also a short jacket belted "to make slender the waist," says Viana, and with the addition of a collar of little shells interspersed with amber, felt abundantly justified in the admiration of their contemporaries. The higher classes on all the islands wore sandals or shoes of various styles made of skins sometimes dressed with the hair and sometimes stained red or blue. Some of them much resemble Moorish sandals, and Ignatius Donnelly remarks that the sandals of a prehistoric statue discovered in New Mexico are "exact representations of those found on the feet of the Guanches." There is not, however, chance for infinite variety in the general plan of a sandal.

HABITATIONS AND FURNITURE

Not all of the Guanches were troglodytes, though they preferred caves to houses and well knew how to take the best advantage of the porous lava formations in which their homes were



A PEASANT OF THE VICINITY OF GUIA, GRAND CANARY

excavated (plate XXI). On the site of the present church of Galder was once a royal cave, and near by are the remains of another with rude interior decorations still visible. In Canary, Hierro, Fuerteventura, Lanzarote, and, very rarely, in Palma, remains of buildings have been found. In all cases they were of the cyclopean class of architecture, made of great blocks massed together without cement, often cut and fitted and polished with such skill that the "interior appeared as if whitened with gypsum." The stones were sometimes so large that it "seemed impossible that men could have placed them one above another." A certain royal palace had walls three feet thick and was lined with planks "so well placed and curiously painted that at first sight they seemed to be all of one piece. . . . Only this house and palace of the king, in order that it might be different from the others of the village, was lined in this manner."

Roofs were ordinarily made of branches of trees covered with ferns and straw, but in Canary they were of solid beams of hardwood placed very close together and themselves covered with a well-adjusted layer of flat stones; above was another layer of earth and dry herbs, and over all a plastering of mud so densely packed that long-continued rain could not penetrate. In Agaete there is a house of the indigenes still inhabited, its wooden roof perfect after three centuries of exposure to wind and weather. Another in Tiraxana serves the purpose of a blacksmith's forge.

The buildings were circular or oval in form, more rarely rectangular, low, with a single very narrow doorway and no partitions internally,—“all after the style of an oven, without corral or court, without window to lighten them.” In Fuerteventura and Lanzarote there were sometimes exterior courts for the inclosure of the flocks. The doors both of houses and caves were merely sticks placed across the entrance, or were made of planks and opened or shut by means of a stick. Each house in Hierro sheltered about twenty families. The streets of Canary were

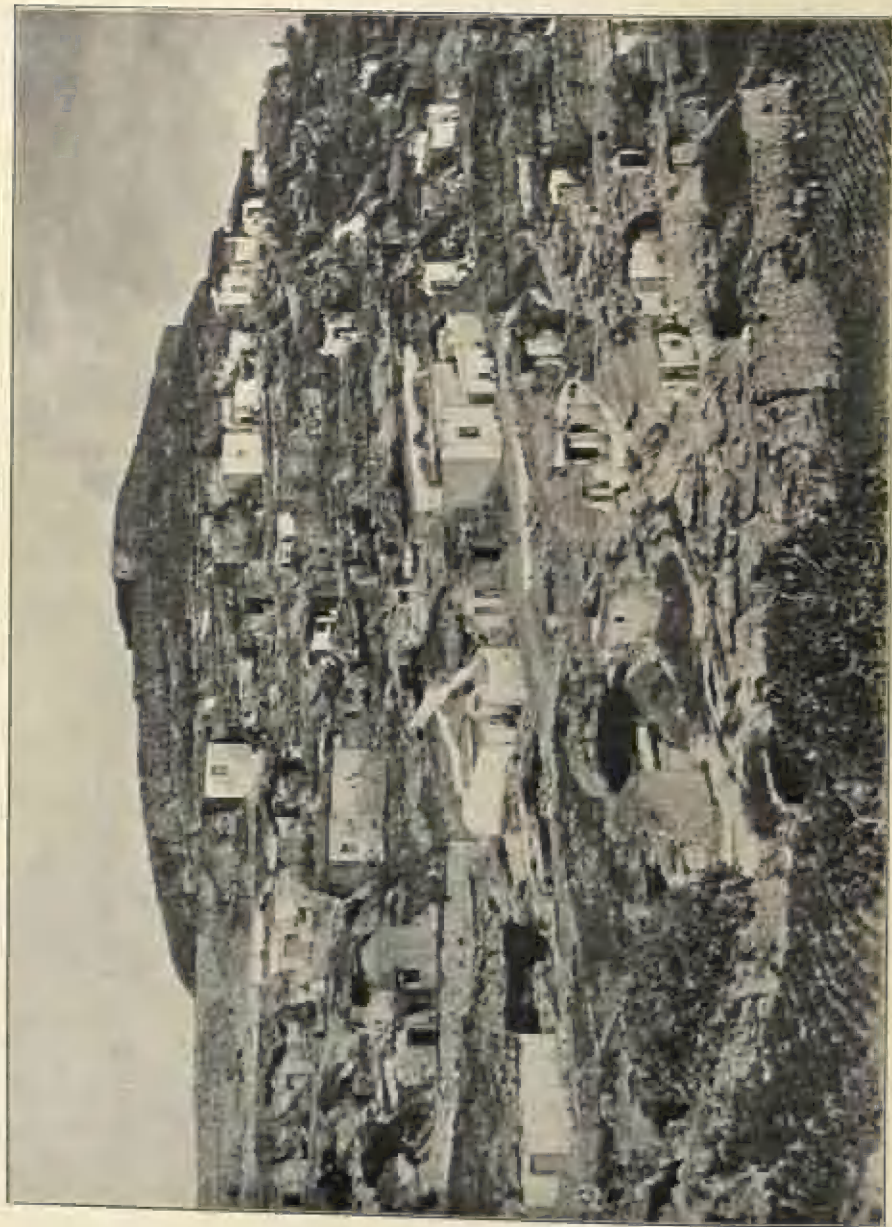
"very narrow and paved with very fine pebbles." The great trees used in the building of the houses were felled by fire.

The caves were opened with sharp-pointed stones and with others perforated in the center and fitted with handles to be used as hammers. The chaplains of Bethencourt mention a ruined city found in the ravine of Aguiniguin (Grand Canary). Several rows of houses surrounded a great circle in the midst of which were the remains of a large building. Before its door stood a great semicircular bench of stone. The houses were elliptical and the laurel beams of the roof remained in some cases. The uncemented walls were eight or nine feet thick, with alcoves, probably beds, in the interior. The ruins of the so-called "castle of Zoramas," in Lanzarote, consisted of similar cyclopean blocks of stone forming a circle. The houses of Fuerteventura and Lanzarote were partly subterranean, as was the case sometimes in Grand Canary, for the sake of warmth.

Floor mats were made of palms and rushes. The table was a flat stone, the chairs smaller ones; the beds were of skins dressed with the hair on and sometimes placed upon a substratum of herbs, ferns, straw, or grass. Leather bags and rush baskets hung from wooden pegs in the walls, while cooking pots adorned the floor.

HUNTING AND STOCK-RAISING

The Guanches were skilled hunters within the limits prescribed by the small variety of animals available for food. Wild pigeons were a favorite article of diet, and the birds were killed in full flight with stones. There were no ferocious mammals, but the hunting of wild goats afforded opportunity for the display of much skill and endurance. Dogs were trained to discover their hiding-places among the rocks and, when routed, the sportsmen pursued their prey over the greatest asperities and along the most dangerous precipices of the mountains. At certain seasons the Fuerteventurans held a "meet" to drive a flock of wild goats into an inclosed place where those needed for food and for the



VILLAGE OF MODERN CAVE-DWELLERS, SOUTHWEST OF LAS PALMAS, GRAND CANARY

sake of the skins were slaughtered. Goats were domesticated on most of the islands. Sheep and pigs were numerous. The sheep of Palma were of a peculiar straight-wool kind, while those of Canary were hairless. The shepherds of Teneriffe knew every sheep among a thousand and counted their flocks without moving the lips or pointing. The Canarios had a well-developed system of counting to the hundreds.

AGRICULTURE—TENURE OF LAND

The Guanches were, par excellence, farmers. Even the kings did not disdain the work of agriculture. The plants cultivated were wheat, corn, rye, barley, and legumes. In Lanzarote barley was the only grain; in Palma, as stated above, there was no cereal of any kind, the roots of the common brake and the fruits of *Malva* serving as substitutes. The ground is still exceedingly fertile, and there are ordinarily two or three harvests a year in Canary and Teneriffe. Bethencourt's chaplains said: "The land yields two harvests of wheat each year without any enriching, so that however badly it is worked and cultivated, the earth provides every kind of abundant fruits." The ground was furrowed with a goat's horn fastened to a spur or tooth at the end of a stick, and in Canary plowing bees were an established custom. Men hoed; women sowed and probably reaped also. Threshing was done either with the feet or with sticks, and in Fuerteventura and Lanzarote the grain was winnowed with the hands. The women of Canary sifted the ground meal through sieves made of reed and palm with a bottom of leather perforated by means of a hot stick.

The land of Teneriffe and Canary was divided among the people according to the rank and needs of the families, and after harvest was returned to the king "without rent, tribute, or gift." According to another author the division in Teneriffe was for life, the grant increasing with the growth of the family.

FESTIVALS AND DANCES

Harvest feasts were the chief social functions of the Guanches. In Teneriffe civil wars were suspended during these celebrations; people went from tribe to tribe rejoicing together, and personal feuds were often permanently healed.

There were four recognized seasons in Teneriffe, and every year, at the end of April, a nine days' feast was held at the royal palace to which all came at the king's expense. The favorite pastimes were dancing, wrestling, running, and jumping. Music was furnished with tambourines, instruments made of calabashes containing little stones, and timbrels of the wood of the dragon tree covered with skins. The taste for music was universal. When Bethencourt returned to Fuerteventura the second time, he brought with him minstrels who played during the feast to which the two kings of the island had been invited. Their royal highnesses were so transported with joy at the sweet sounds that they forgot to eat. No greater evidence of appreciation could have been given by men blessed with the phenomenal appetites with which their race was credited. The still popular *campo* or country dances are a distinct inheritance from the Guanche festivals. The men and women without touching approach, recede, revolve, constantly moving their hands above their heads, snapping their fingers, leaping in time to the music, and singing the weird, monotonous island air to the accompaniment of the stamping of feet, clapping of hands, or whistling of the spectators. An old writer, Francisco de Gomera, says: "Two things go through the world which have ennobled these islands: the Canary birds so esteemed for their song, and the *Canario*, a dance graceful, elegant, and ingenious."

The inhabitants of Hierro have a distinct ancestral dance, in its melancholy character reflecting the temperament of the people. The participants join hands and, moving around in a circle, sing songs so plaintive that they are said sometimes to weep bitterly because of the sentiment of the verse. The warlike

Gomerans celebrated the exploits of their heroes in chants, and Azmara affirms that they passed the greater part of their time in singing and dancing. Feasts were sometimes held by the light of the moon or by firelight and often near the seashore. After the dancing there was refreshment of roasted or fried meat and then "each one returned to his own dwelling." There were also houses where the people of Canary met to dance and sing, and the beginning of the year in that island (June 21st) was a festal occasion celebrated by feasts and marriages.

ESTHETICS

The Guanches had no well-developed artistic taste. Viana mentions a portrait painted on wood with charcoal, ocher, the juices of herbs, and the milk of the wild fig tree. The walls of the royal palace in Galdar are decorated with rude designs in color, and some of the old pottery exhibits ornamental tendencies, being as well made as that of the present time. We have already mentioned the blue and red tattooing practised in Canary and the dyeing of cloth, but none of this work endangers the reputation of Michelangelo or of Worth. The islanders were fond of perfume, and they adorned their houses and public places with flowers and leaves.

WAR CUSTOMS

But above all things the islanders were fond of fighting, with the single exception of the natives of Hierro, who knew no war and had no weapons unless their long leaping-poles were used as such when occasion demanded. Tribal boundaries furnished endless cause of provocation and kept the warriors in good practice, but at the same time so reduced their numbers as to make it possible for the Spaniards eventually to conquer them.

There were about five thousand fighting men in Canary and nearly as many in Teneriffe when the foreigners came, and it required almost a century for these armored, civilized warriors to subdue the "savages" dependent on stones and wooden lances.

They proved themselves fertile in stratagem, quick to recover from defeat, of unconquerable courage and tireless valor. The women accompanied the men in war to prepare food, care for the wounded, provide new weapons, promote courage in the encounter, and, not seldom, to share in it. In almost inaccessible caves reserves of stones and arms were carefully guarded. Their weapons were sticks with the points hardened in fire and made very sharp, sometimes with two little balls in the middle where the hand was placed, and with little spines at the end which broke in the wound, or sometimes armed with a ball at each end. Their javelins were eight or ten feet long. With this latter implement Doramas pierced the heart of a mounted Spaniard after it had traversed his coat of mail. They threw sharp stones with great skill. The coat or cloak, rolled on the left arm, served as a shield. After the coming of the Europeans the Canarios made shields, in imitation of those of their enemies, from dragon-tree bark, and swords of pine hardened and so tempered by fire as to cut almost like steel. On discovering the destructive power of European weapons, they considered that wounds were deadly in proportion to the noise of the discharge producing them, and therefore in battle imitated with the mouth the sounds made by the crossbows and arquebuses of the Spaniards. Before fighting they anointed the body with the juices of plants mixed with fat or with sheep's oil. They communicated by means of signal fires and by whistling sentinels who could be heard for miles. It is said that in 1615 an English traveler, who asked the descendant of a Guanche to whistle in his ear, was deaf for fifteen days in consequence. During battle the air rang with shouts and whistles.

Constant harassment by the slave-making raids of foreigners developed the strategic powers of the islanders. One contrivance of the Canarios to surprise the enemy was to keep tamed gulls in and about the shore villages. When barks approached such places, an ambush was set and several of the birds were tied to the roofs of houses. The invaders, seeing gulls about, would

conclude the village to be deserted, go boldly up, and come no more back. Again, when boats were seen, a few men were sent to collect mollusks along the shore, the others remaining concealed. The supposed stragglers, when pursued, led the foe into the ambush. Women, old people, and children were protected in war; pillage was forbidden, and places of worship were not molested. Treaties were kept, and the shameless treachery of the foreigners was a source of great amazement to their uncultured foes. By no open means could they have been subdued, and, to the end of the hopeless, one-sided struggle, their heroism and patriotism shone with ever-brightening luster. Their leaders were men who would have won a people's love and honor in any land—proud, true, and dauntless. When Doramas, the great hero of Grand Canary, was wounded and taken prisoner, some of his followers voluntarily surrendered in order to attend him and be present at his death. In 1493, Lugo, having subdued Palma, went to Teneriffe and sent to Bencomo, the chief of the *menceys* (kings), to accept the Spanish friendship, sovereignty, and religion. Bencomo replied: "I know not how to refuse my friendship to one who has done me no wrong; as to the new religion, I cannot embrace it without understanding it; and concerning obedience required towards other men, know that the *menceys* of Teneriffe never debase themselves."

Their magnanimity in success equaled their courage in defeat, and both put to shame the perfidy of their slaughterers. A Spanish captain was captured and sent to Bencomo with the request that he be punished. The chief replied: "Friends, free this man, for I cannot show my valor against one alone. Free him, and when he comes with his followers I will punish him." This was at a time when the Guanche camp was devastated by a great pestilence which killed over a hundred men each month, and the life of an enemy was of tenfold value. After the conquest this same captain married Bencomo's daughter. It is to be hoped that he repaid his debt of gratitude by life-long devotion.

Love of country was so deep in these untaught men that when resistance to the invaders was seen to be useless, the king of Galdar, the *faycan* of Telde, and others threw themselves into the sea rather than submit to the foreign yoke.

MARRIAGE AND KINDRED CUSTOMS

With the exception of the Lanzarotans, the islanders were monogamic, but if matrimony proved unpleasant, separation was allowable and a new conjugal relation was not prohibited, although in Teneriffe the children of the first marriage were not considered legitimate. If the king of Teneriffe could not find his equal, he was obliged to marry his sister to prevent the admixture of plebeian blood. Others might marry whom they would, except mother or sister, and the suitor asked his bride of her father or, if he was not living, referred the great question to herself. The custom of throwing grain in the faces of the newly wed is as old as the Guanches. There were no class distinctions in Hierro, and only the king was limited in his choice of a wife to one of royal lineage. The bride was usually obtained by a gift of flocks or of cattle. If a family became too large for the means of the parents, the supernumerary children were taken by other families and rarely left to public charity. When a babe was born, before being allowed to take milk it was given roasted fern-roots bruised and mixed with butter. Even in the time of Glas, the middle of the eighteenth century, a similar custom prevailed, the first meal of a baby consisting of roasted meal mixed with bruised cheese. Also in Hierro, Gomera, and Palma little brushes made of the macerated roots of *Pteris* were dipped in milk or butter and given to the babies to suck.

The daughters of Canario nobles were sent to the convents of vestals situated on high, secluded mountains until they reached the marriageable age of twenty years. They were taught by "old women of good life" to cut and adorn skins, to make mats and baskets of reeds, to draw threads from the tendons of goats,

and to make needles of the spines and bones of fish. If a damsel erred, the ancient matron who conducted the school called together the pupils and said, "If I were the daughter of such and such parents [naming those of the girl in question], and had committed this fault [naming it], I should merit this punishment"—and thereupon she struck the ground several times with a bunch of rods, and with this they remained very tearful and much benefited.

The boys were taught by men. They knew no letters, but used a kind of coarse painting. They learned the careers of their kings and illustrious men, lineages, agricultural lore, the signs of the weather, and the approved methods of foretelling future events. They were spanked with little bunches of reeds when occasion demanded, or, for grave offenses, whipped on the shoulders.

The lover asked his bride of her father, who referred the decision to her. The marriage ceremony was the occasion for a feast of several days' duration, but for thirty days preceding, the girl was kept in a reclining position and fed heartily on fattening foods, for nobody wanted a lean wife.¹ Her parents then took her to the sea and bathed her several times, after which she was presented to the lord of the district. If she pleased him he kept her for one night; otherwise he delivered her to one of the nobles. If a child came from this primeval morganatic connection, it was a matter of congratulation and the baby was considered noble. This strange custom resulted in the over-population of the island, and Gomez Escudero declares that after some years of famine a law was passed commanding the slaughter of all girl babies with the exception of the first-born. Dr Chil seriously doubts the existence of any such cruel enactment, and it was certainly not long enforced, for an epidemic which destroyed one third of the population soon rendered it inexpedient.

One of the first duties of hospitality in Canary and Gomera

¹ This was customary in Lanzarote also.

was for the host to offer his wife to his guest. Refusal of the courtesy was considered an insult. In consideration of these things it seems paradoxical, yet it is true, that the Canarios held womankind in highest esteem. One who lost her virtue was ostracized, and for the rest of her life no one spoke to her. If a man met a woman in a solitary place he was forbidden to speak to her; there were, indeed, sometimes separate roads for the two sexes. There were also bathing places set aside for the use of women to which no man might approach without severe punishment. To these women went alone, but never elsewhere without a companion. Second marriages were not prohibited in Canary, but the children of a noble by his second wife were not considered noble unless made so by the act of the *guanarteme* (king). Among the Gomerans the sons of sisters and brothers, rather than a man's own children, inherited his property, perhaps because the customs of married life already referred to rendered it somewhat difficult to ascertain who were a man's own children. Many of the women of Lanzarote had three husbands, who held the position in turn by months, the one next to succeed to the honor serving until his time came to be lord. The babes there were nourished from the mouth, causing a prolongation of the mother's lower lip "which was very ugly to see."

MEDICINE

The herb-tea-and-bleeding school of medicine ruled without competition. A decoction made from the fruit of the mocan tree was in favor. The body was burned or cut to let blood for the curing of acute pains, and the wound afterward dressed with butter. Wounds were also cauterized. In Hierro the sick were anointed with butter and covered with skins to induce perspiration. In Palma, when sickness or extreme age showed death to be near, the friends were called and the dying man said, "I wish to die." This request was religiously observed, and he was carried to a sepulchral cave chosen by himself, laid upon a bed of

skins with his head to the north and a vase of milk put beside him; then the entrance of the cave was closed and he was left to fight his last battle alone. Truly Viera well called the Palmans the "Spartans of the Canaries." A chief of this island was captured by the Spanish and sent home as a trophy of war, but, unwilling to survive the disgrace, he refused food and died of starvation.

MORTUARY CUSTOMS

If, as Dr Chil thinks, the care of the dead is an index of the belief of a people in immortality, the Guanches of Grand Canary and Tenerife must be esteemed highly religious. Mummies have been found in the caves of these islands which rival those of Egypt in the perfection of their preservation. Not all of the dead were embalmed, however. Those of Fuerteventura and Lanzarote were simply buried in tombs of stone within caves, the wealthy only being wrapped in skins. Embalming was occasionally practised in Palma and Hierro, but probably not so skilfully as in the two central islands. The bodies in Palma were ordinarily laid in caves, upon skins, because "neither the earth nor anything pertaining to it should touch the body of the dead." In Hierro a board was placed at the feet and a leaping-pole by the side, and the entrance to the cave was closed "that the crows might not eat the body." In certain parts of Tenerife — for example, in the cemeteries of Guía, — corpses never decomposed. Laid in the midst of a lava bed, they were very soon thoroughly dried by the sun. The poor, wrapped in the mantle ordinarily worn in life, were buried in such places or were simply put away in a cave. In Canary, likewise, the dead were often buried in the *malpais* (lava beds). The graves were sometimes lined and covered with pine planks, above which were placed stones six feet long with small ones closely filling the interstices. The head of the body was turned toward the north in the tombs of the Isleta, but in some smaller sepulchers in Aguiniguin some

corpses were laid east and west. The Canarios "considered it a great crime to inter in the pure earth, lest worms should eat the dead." Seeds of *Cnicorum* were commonly found with the bodies, probably to prevent putrefaction. Nobles were sometimes buried in an upright position, clothed in the garments worn in life. The remains of Guanche cemeteries may still be seen on the Isleta near Las Palmas and at Agaete. Amidst the waste of black volcanic stones by the seaside are the rifled sepulchers of the nameless dead—great square heaps of stones and empty pits eloquent of what is not there. The ocean waves beat ceaselessly a funeral chant; majestic mountains stand guard over the old heroes; like Timon's is their resting-place, and perhaps not less tragic than his was their life.

But the better classes both in Canary and in Teneriffe embalmed their dead with great care and then interred them in sepulchral caves. The wealthy had their own family caves, and others were set apart for the reception of the kings. It is said that there were more than twenty grottoes where the princes and nobles of Teneriffe were buried, but their entrances were known only to the initiated. Viana (about 1772) obtained admission to one of these where he saw more than a thousand mummies deposited upon planks and showing not the slightest sign of corruption. The kings were laid uncovered in the royal sepulchers in the order of their reigns. Mummies were sometimes put into coffins from which the feet protruded.

Some years ago the builders of the government road which skirts the northern coast of Grand Canary encountered one of these secret places. The excavations loosened a part of the mountain-side and a great mass of earth and stones fell, disclosing a honeycomb of cave openings (plate XIX, *b*). On exploration there were found to be three hundred and sixty-five connected compartments, most of them containing human remains. A great part of this archeological treasure was removed to Las Palmas. There are now only about two hundred of the chambers, and all

of the human remains have disappeared. One finds it hard to understand how the ancient people reached them. Probably the excavators and burial officials were lowered by ropes to the scene of their work, where, midway between heaven and earth—seen only by soaring hawks or eagles—they pursued their lonely calling.

The cleaners of corpses lived isolated and despised. Women prepared the bodies of women, men those of men. During the process, which lasted from fifteen to twenty days, the body was watched night and day to prevent the ravages of ravens and other creatures. The husband or wife or nearest relative of the deceased meanwhile supplied the cleaners with food. When the body had been thoroughly cleansed and dried, the actual embalmers—a class not despised—began their work. Sometimes the relatives themselves wrapped it in skins so marked that the individual was recognizable. Clay vases full of milk or butter, dried figs or dragon-blood paste, and wooden jars of honey were put beside the dead. Other things found in the sepulchers were hatchets, battle-sticks, fish-hooks, clay beads, vases, clay molds for stamps perhaps used in tattooing, basaltic stones cut into pyramidal form and carved with transverse lines and lozenge-shape figures, and perforated disks made of the spirals of shells. All of these are analogous to objects found in the prehistoric caves of Spain. Cereals of various kinds, among which wheat has been recognized with certainty, were also taken from the tombs.

The mummies were most excellently preserved and were as light as straw. They "wanted neither hairs nor teeth." Nerves and tendons, finger- and toe-nails were distinguishable. The skin was undestroyed. Some of the bodies were stretched at full length, "others seated, women with children at the breast, all very dry, so that the features were almost recognizable, though they had been thus very many years." The wrappings, in number from one to twelve, when removed, perfectly retained the form of the body, and, as has already been said, were as

strong as if newly made. Skins were not always used. Many bodies were covered with a coarse cloth woven of macerated *Juncus* fibers and tendons, outside of which reed mats were wrapped. The cloth was often a yard and a half in width, proving that the islanders understood a primitive kind of weaving. It appears that at the time of the conquest embalming was not commonly practised, for the most remarkable of the numerous volcanic caves used as sepulchres are in the torrents of modern lava at Icod de los Vinos which contain many unembalmed human skeletons.

The dead were not forgotten.⁴ Pilgrimages were made to the tombs which were in certain sacred rocks, as, for instance, Tirma in Canary. The visitor, on entering, saluted, saying, "Here comes the guest." The answer came, "Let him be welcomed." Whether such pilgrims brought offerings is not recorded; but it is stated that odoriferous woods were sometimes burned in pits in memory of the dead.

COSMOGONY

Espinosa writes that the Guanches believed that in the beginning God created a certain number of men and women with the earth and the water to be divided among them and the flocks necessary to their existence. Afterward He created others, but gave them nothing, and when they claimed a share of this world's goods, God said, "Serve the others and they will give you." Hence came masters and servants, nobles and retainers.

GOVERNMENT AND SOCIAL ORGANIZATION

Until shortly before the time of the conquest Teneriffe was one consolidated monarchy governed by two kings—one living, one dead. The latter remained until his successor died, when his

⁴ Pedro Gomez Escudero assures us that the islanders prayed to the spirits of their ancestors, which were supposed to cross the sea to give them counsel, and were visible on the longest days of the year as little clouds on the horizon. Great feasts were held in their honor.

body was removed to the common resting-place of kings, or, according to one authority, was thrown into a pit. The last king of the whole island was Tinerfe, or Chinerfe, from whom it may have been named. Notwithstanding the usual custom of the succession of brothers rather than of sons, his kingdom was usurped and subdivided before his death by his nine sons, and the tribes so formed were at constant warfare with one another.

When a new *mencey*, as the ruler was called, came to the throne, the people assembled in the place of public meetings. Amid general acclamation, he passed over the flower-strewn ground to the throne—a stone covered with skins. Then one of his relatives presented to him the royal humerus (the bone of the right arm, or, according to others, the skull of the chief of the reigning dynasty) which served as a scepter and was carefully preserved in a leather case. The *mencey* bowed respectfully before it, then, lifting it above his head, took the oath of office: "I swear by the bone of him who has borne the crown, to follow his example and to seek the happiness of my subjects." The chiefs, in the order of age, taking the humerus, said: "We swear by the day of your coronation to constitute ourselves your defenders as those of your race." The king was then given a crown of laurel mixed with flowers, and a great festival followed at the expense of his majesty.

Cadamosto relates the fable of certain men throwing themselves from cliffs into the sea on the occasion of a coronation, their descendants being rewarded by the king for this mark of devotion. When the *mencey* traveled or moved from his winter home on the seacoast to his summer cave in the cool inland heights, he was preceded by a courier bearing a stick with a banner of reeds on the end, and accompanied by his councilors. When the people saw the royal standard, they ran to prostrate themselves before their prince, and the most enthusiastic wiped the dust from his sandals with the lining of their robes and then kissed his feet. The anniversary of the coronation was always

observed with pomp. The subjects rendered homage by kissing the feet of their king and by bringing to him gifts of skins, fruit, and flowers. The richest were permitted to kiss his left hand, the chiefs his right, but all kneeled to him, saying, "I am thy vassal."

Class distinctions were closely preserved in Teneriffe, and there were clearly specialized occupations corresponding to them. Nobles were farmers and the owners of flocks; potters dwelt in the hillside caves; tailors cut skin garments with stone knives; carpenters were characterized as *limpios en su traje*; cleaners and embalmers of dead bodies and also butchers constituted the scum of society. Even criminals objected to associating with these last in prison, therefore their misdemeanors were tried at once and punished immediately by whipping in the court of justice. A follower of this trade could make known his wants only by pointing to the articles required, for his touch carried pollution—an ostracism which is continued to this day in a somewhat modified degree. Executioners were likewise execrated here as on the other islands. There was also a class of midwives in Teneriffe who lived together in caves, going out only when called. Some say they were not allowed to marry anyone, others that by the act of washing the head of a new-born babe and bestowing its name they contracted relationship with the father and could not marry him. When asked whence this custom was derived, they only answered, "So it is done." The Hamaguadas¹ of Canary performed similar offices for the children there. All of these received pay in grain, meat, or legumes, money being unknown. Exchange of commodities was facilitated by fairs held at appointed places. There were weights for grain and measurements for cloth. The men only did the bargaining, conducting transactions with a good faith which "attracted the attention of the invaders."

Justice was administered by the king seated on his throne in

¹ See page 471.

the *tagorer*. Murderers were ostracized and their possessions confiscated, capital punishment being forbidden on the ground that God alone who gave life had the right to take it away. Robbers were compelled to do menial work, such as killing and skinning goats, or were bastinadoed with the pastoral staff of the prince who himself saw that the wounds were afterward dressed. The adulterer was buried alive, the girl remaining in prison until someone promised to marry her. Children who insulted their parents were stoned. Cowardice was punished by law, as was also failure to respect sacred personages. When a criminal was condemned none prayed for another, nor was the king appeased by presents, nor by intercessions, nor by tears, but the sentence was executed within two hours. "So all lived with love and loyalty for each other."

The Guanches of Teneriffe were chivalrous in the extreme. If a man met a woman in a solitary place he stood aside to let her pass and could not look at her nor speak unless she first addressed him. Transgression of this law was severely punished. When a person went to the house of another, he seated himself on the stone before the door and whistled or sang until invited to enter. To go in unbidden was a punishable offense.

The inhabitants of Grand Canary were for a long period divided into ten tribes, but during the fourteenth century these were united under the control of one woman. Her two grandsons, with the title of *guanarteme*, had divided the temporal power at the time of the conquest, while the spiritual power was shared by two so-called *faycans* or *faycigs*.

Each *guanarteme* had six advisers, and these held yearly joint councils where the princes presided seated upon their thrones, the nobles sitting on lower stones at each side. Besides these chiefs there was a governing assembly of not fewer than one hundred nor more than two hundred warriors who preserved the religious rites and secrets. When five or six had died, successors were chosen from among men who had never contracted alliance with

inferiors, and these were confirmed by the *faycan*. The aspirant to nobility must be the descendant of a noble, the possessor of flocks, and physically able to carry arms. On the day appointed, he appeared before the warriors with his hair flowing over his shoulders. The *faycan* said: "All you who hear me, I conjure you in the name of God, to declare if you have seen such and such a one, the son of such and such a one, enter into a slaughter house to take or to kill goats, if you have seen him prepare his repast with his own hands, commit rapine in time of peace, or show disloyalty or insolence in word or action, especially toward women." If no one condemned the young man, the *faycan* cut his hair over his ears and a little above his shoulders, and armed him with a javelin; his beard was allowed to grow and he was noble. If anyone testified against him, his hair was shaved and he became plebeian for life. The native aristocracy of Canary lived inland, the poor near the sea. Each village had two youths chosen respectively to serve as object-lesson of the good and the bad.

Crimes were tried by judges chosen for their great virtues, who rigorously administered the traditional code. They were distributed over the island and were paid by fees of fruit. Those who judged the nobles were themselves of noble birth; they wore long hair, and their sentences were executed by night. Commoners were tried by men of their own class and suffered punishment by day, but the law was the same for all. In each village there were persons whose duty it was to accuse the wrong-doers of the neighborhood. The murderer was taken to the seashore and placed with his chest upon a flat stone while the executioner threw another great stone upon his shoulders, crushing the ribs and vital organs. The housebreaker and the adulterer also were put to death, while the revolutionist was thrown from a cliff into the sea. Lying was a punishable offense.

Taxes were collected by officials who delivered them to the *faycans* to be distributed to the needy. Grain was stored for use in case of famine, in fresh cool caves on the mountain tops or

buried beneath the floors of dwellings in a pit covered with an enormous stone.

The people of Palma were divided into twelve tribes, each ruled by a chief, and constantly at war with one another. If a man was insulted he called his friends and publicly retaliated in the same manner, "after which all took up residence in a different place." While the Teneriffians were "very good friends of their word" and the Canarios astonished the conquerors by their truthfulness, the Palmans rewarded a skilfully told lie and praised adroit pillage — Spartans in these as in more laudable respects.

The people of Hierro, governed by one king, "lived at peace among themselves." With the exception of the king, all were on perfect equality, and he received only voluntary contributions from his subjects. The murderer suffered the same death which he had inflicted. The first theft was punished by putting out one eye, the second by putting out the other.

The Gomerans, according to Azmara, "followed no law and only believed that there is a God." There were among them seven hundred fighting men commanded by a "duke" and certain chiefs, but shortly before the coming of Bethencourt the island was divided into four tribes whose chiefs had the title of "saint."

In Lanzarote and Fuerteventura there was absolute hereditary government, probably regardless of sex. The latter island was divided into two hostile tribes, separated by the narrow isthmus which constricts the island near its southern extremity. In both countries murder was punished by stretching the criminal on the ground with his head pillowed on a stone while another large stone was dropped upon it. The traitor was stoned and his body burned. Rights of property were protected and inherited; infamy was also hereditary. In Lanzarote law had no power over one who entered the house of an enemy by the door, even though he came with murderous intent; but if he jumped over the wall to attack him unexpectedly, he was killed as a traitor. Warriors distinguished by special acts of bravery, however, were

a law unto themselves and exempt from all the conventionalities of common life. Land taxes defrayed the expenses of the sovereign of this isle.

RELIGION

It has already been indicated that the Canary islanders were a religious people. The Teneriffians believed in Inferno, but not for sinners; they located it in the great crater or deep in the earth, and thought that there the genius of evil suffered unending tortures. They swore by Inferno, by the sun, and by the bones of their ancestors. Cadamosto states (on what authority we do not know) that the Guanches of Teneriffe had nine kinds of idolatry, some worshipping the sun, others the moon, others stars. God was described as good, omnipotent, wise, the supporter of Heaven and Earth. In times of drought the shepherds took their flocks to a certain deep valley. The little ones were separated from their mothers and the hills reëchoed with wailing. "The shepherd people whose hopes lay in their flocks believed that this intercession of the innocent victims of the famine would appeal to Heaven." Meanwhile the men and women cried aloud and danced around a pole stuck in the ground, not eating until rain fell. The following incident illustrates the tenacity of their beliefs: An exploring party sent out by Lugo, brought back a woman and child. They wished to baptize the baby, but the mother insisted that he must remain of the same religion as herself, and when the Spaniards persisted in their purpose, she took him to a cliff and jumped with him into the ocean.

The Canarios were monotheistic, believing in the reward of the good and the punishment of the bad. According to Marin y Cubas, they swore by the sun; they considered the soul immortal and capable of suffering anxiety, sorrow, hunger, and thirst, and therefore carried food to the sepulchers of their dead; they believed that the devil appeared visibly under various forms, his favorite habitation, as in Teneriffe, being the body of a woolly

dog, and they worshiped him in sacred places in mountains, forests, houses, and on rocks, by all of which they solemnly swore. Upon a high rock near Tiraxana there were three great braziers where sacrifices of fruits were burned, the direction of the smoke being considered prophetic.

Not long ago there was discovered at the top of the mountain of Cuatro Puertas, a great cave eighty feet square, with four entrances each fourteen feet high and six feet wide, separated by pillars seven to nine feet thick. Before these entrances was a circular space, and on the south side of the mountain a much larger circle crossed by semicircular furrows and large ditches. There were also the remains of a gigantic wall, a masterpiece of ancient construction. It appears that here was a place of worship—perhaps the home of the Maguas, or Hamaguadas, sacred women supported by the voluntary contributions of the nobles. They left the houses or caves in which they lived only in case of famine and on certain fixed days when they went to the sea to bathe; and if by chance any man met them then, he lost his life. "Only when they went to worship at Tirma was it permissible to gaze on them from afar." They wore white robes of skin which swept the ground. After reaching the age of thirty years they might marry, but any failure in virtue before that time was punished by imprisonment and starving to death in a stone cell.

Don Pedro del Castillo describes a convent of vestals situated on the steep rocks of the ravine of Valeron. It consisted of one great room, with little cells one above the other along its sides, each with an opening toward the ravine. Two large towers with interior staircases stood before the grotto. The temples were kept by vestals who daily sprinkled them with the milk of goats set apart for the purpose, from which the kids were not taken. The temples and the surrounding precincts were places of refuge for criminals and their flocks, "and therefore were very much inhabited."

Cedeño says that there were also religious men who lived

together in caves and houses of earth, and were supported by tithes given them by the community. In years of scarcity they took no tithes to keep, but distributed them among the poor and themselves ate what had been saved in preceding years. They "always succored the poor with alms, although this was rather the duty of the lord of the land." In times of famine they prayed with uplifted hands to the one omnipotent God. The Maguas did the same, and the people gathered the flocks produced from the tithe offering and shut them in a corral without food for three days. Then, if no rain came, they were given "very little" to eat and again imprisoned.

There were two sacred rocks—one, Tirma, in the district of Galdar, the other, Umiaya, in the district of Telde. To these the people went in procession in times of trouble. The Maguas, carrying palm branches and libations of milk and butter, led the way, gesticulating with head, body, and arms, their eyes lifted to heaven; the people, also bearing branches, followed. Around the rocks they danced and sang, intoning complaints. Then all went to the sea to beat the waves with the branches while the air was rent with cries and laments. Some say that at such times warriors threw themselves from the sacred rock, Tirma, as expiatory sacrifices. One of the very few idols found on the islands was a wooden image of a goat and a buck discovered at Tirma. Like the others of its class it may have been of Phenician origin.

The Palmans were also monotheistic; they raised to the Deity pyramids of stone and around them feasted, danced, and performed feats of strength and skill. In the great Caldera—the immense crater which is the wonder of geologists—was a rock six hundred feet high, like an immense obelisk, which was deified under the name of *Idafe*. Presents and prayers were made to it, probably with the idea of averting its fall. Whenever a sheep or a goat was killed, two men were deputed to carry to its base the heart, lungs, and liver. Approaching with fear and trembling,

one said, "Wilt thou fall, Idate?" to which the other answered, "Give to him and he will not fall." Sometimes the Palmans also threw sacrificial animals from the rocky precipices.

The people of Hierro prayed only when in trouble; the men had one god, the women another. On conversion to the Catholic faith the islanders gave the names of these two deities to Jesus and Mary respectively. They believed that when the heavenly powers wished to do them good, they descended to two great rocks still pointed out as the "*Santillos de los Antiguos*," where they received petitions, afterward returning to their own place. In times of drought the people assembled around these rocks to pray for rain. If, after three days of fasting, their petitions remained unanswered, a holy man was sent to a certain cave from which he brought a sacred pig. Taking it from beneath his mantle in the presence of the shouting crowd, he set it free to roam as it would until the coming of the rain, when it was returned in triumph to its prison. Glas says that this pig was thought to be the devil, who was greatly learned in the ways of nature and produced rain to blind the people and make them worship him.

In Fuerteventura and Lanzarote, circular temples surrounded by two concentric walls were built on the mountain tops. Here offerings of butter and libations of milk were made which, according to André Benaldos, "*repandait une forte mauvaise odeur*." The people also worshiped their god from the summits of the mountains, lifting their hands to heaven and pouring out libations of milk. When the Spaniards came to Fuerteventura two women were held in great repute as prophetesses. They were supposed to hold communication with the devil; one of them settled disputes, while the other regulated ceremonies. Dr Chil says that good and ill were also foretold from the direction taken by the smoke of barley burned as a sacrifice.

THE WOMBYA ORGANIZATION OF THE AUSTRALIAN ABORIGINES

By R. H. MATHEWS

The object of the present paper is to define the geographic limits of that portion of Australia which is occupied by aggregations of tribes distinguished by having eight intermarrying sections in their social structure. It is proposed to give this type of division the name of the Wombya organization, after the Wombya tribe, owing to their having been the first people in this part of the country whose sectional divisions were accurately reported and described.¹

The accompanying map shows the northeastern corner of Western Australia, the northern half of South Australia, and the northwestern corner of Queensland, being the whole of the territory within which the Wombya organization prevails. Within this region each native tribe is divided into two primary phratries or groups, which may be called *A* and *B*. Each of these phratries is subdivided into four sections, making a total of eight divisions of the community. A name is given to each of the eight sections, by means of which the members of the different divisions are readily distinguished; and identification is further facilitated by a masculine and a feminine form of each of these names.

The accompanying table, illustrating the divisions of the Chin-galee tribe, exhibits the rules regulating the intermarriage of the several sections and the names of the resulting offspring. Examination of the table will show that the sons of the women of either phratry marry the daughters of the women of the other, and that the children of both sexes belong to the same phratry as their mother, but to a different division of it.

¹ *Proc. Amer. Philos. Soc.*, Phila., vol. XXXVII, pp. 151-152.

Taking the first name in the table, we see that a Jimmitcha man marries a Nungalleeinjah woman, who is his regularly appointed spouse; but he has the alternative of marrying a Nalainjah maiden instead; or, polygamy being allowed, he may take a wife from each of these sections. If he marry a Nungalleeinjah woman his sons will be Taraleecinjah, and his daughters Naraleecinjah; but if he select a Nalainjah woman his sons and daughters will be Tun-

Divisions of the Chingalee Tribe

Phratry	Section of Parents		Section of Offspring	
	Husband	Wife	Son	Daughter
A	Jimmitcha	Nungalleeinjah	Taraleecinjah	Naraleecinjah
	Chunainjah	Nalainjah	Tungareecinjah	Nungareecinjah
	Chemarainjah	Naraleecinjah	Chulainjah	Nalainjah
	Tampachina	Nungareecinjah	Chungaleecinjah	Nungalleeinjah
B	Chungaleecinjah	Nameecinjah	Tampachina	Nabajinah
	Chulainjah	Nanainjah	Chemarainjah	Nemarainjah
	Tungareecinjah	Nabajinah	Chunainjah	Nanainjah
	Taraleecinjah	Nemarainjah	Jimmitcha	Nameecinjah

gareecinjah and Nungareecinjah, respectively, the sectional name of the offspring being determined through the mother.

Again, a man of the Chunainjah section, whose proper wife is Nalainjah, can marry Nungalleeinjah. That is, Jimmitcha and Chunainjah can exercise their choice over the same two sections of women. Similar privileges are accorded to the men of the other sections. Chemarainjah and Tampachina may marry as stated in the table, or they may reverse their wives the same as Jimmitcha and Chunainjah can. Chungaleecinjah and Chulainjah may marry as in the table, or to either of the women opposite their respective names. The same applies to Tungareecinjah and Taraleecinjah and their alternative choice of a wife.

Totems consisting of animals, plants, and inanimate objects are attached to certain pairs of sections, and these totems descend generally from a father to his sons and daughters, but this rule is

subject to modification. Certain totems are allotted to, or are inherited by, two sections in common, one of the sections belonging to phratry *A*, and the other to phratry *B*. Hence we find that Jimmitcha and Taraleecinjah, who stand in the relationship to each other of father and son, have a collocation of totems attached to them; Chemarainjah and Chulainjah have another lot of totems; Chunainjah and Tungareecinjah have another, and Tampachina and Chungaleecinjah have their own totems in the same manner. The section names composing each phratry are those given in the "wife" column of the table. The masculine form of each name can readily be found in the "offspring" columns.

As Jimmitcha is a man of *A* phratry, his son Taraleecinjah belongs to *B* phratry, therefore it follows that the totems allotted to this pair of sections will fluctuate from one phratry to the other in each generation. And this also holds good in regard to the totems of the other pairs of sections. Owing to the alternative allowed to a man in choosing his wife, already explained, the men of the Jimmitcha, Taraleecinjah, Chunainjah, and Tungareecinjah sections are more nearly related among themselves, as fathers and sons, than they are with the men of the other four divisions, who are their brothers-in-law. If we take Chemarainjah, Chulainjah, Chungaleecinjah, and Tampachina as examples, it will be found that the rules in force in the preceding four sections also apply to these.

In tracing the genealogy in the direct line given in the table it can readily be demonstrated that a brother's son's progeny intermarry with a sister's son's progeny; but if we follow the descent of the offspring in the alternative line previously referred to, it is found that a brother's children intermarry with a sister's children. Study of the table will show also that by taking the men of one phratry in a certain order they are the fathers of the men of the other phratry in continuous alternation; taken in another order they are brothers-in-law one of the other; and by taking them in

a different way they are related as brother's children and sister's children. The reader can easily select examples for himself.

On the accompanying map, No. 1 shows the country of the Wombya tribe, including Cresswell and Burnett creeks, Corella downs, Eva downs, Beetalo downs, Walhollow downs, etc.¹ In this tribe some of the totems have certain country assigned to



FIG. 54.—Geographic distribution of the Wombya organization.

them; for example, the Kangaroo, Eaglehawk, Emu, and White hawk will each have certain plains, ridges, scrubs, waterholes, and the like. The same custom is observed among different tribes of this organization. Each section has also certain restrictions as to the animals and plants which they may use as food.

No. 2 is the territory of the Inchalachee and Warkya tribes, who occupy the sources of Gregory and Georgina rivers, and from Camooweal to Lake Sylvester. Their eight divisions have previously been given.²

No. 3. The Yookala, Karrawar, Wonyee, and Yangarilla

¹ For their divisions see *Proc. Amer. Philos. Soc.*, Philadelphia, vol. xxxvii, p. 152.

² *Journ. Roy. Soc. N. S. Wales*, vol. xxxiii, p. 111, table 3.

tribes inhabit the coast of the Gulf of Carpentaria from Calvert river to the Nicholson, and southerly to the Inchalachee territory. Their sectional divisions have also been reported.¹

No. 4. On the coast of the Gulf of Carpentaria, from the Calvert to the Roper, including the McArthur and other streams, are the Yanyular, Willangan, Binbingha, and Yuggamurra tribes.²

No. 5 on the map is the country of the Chingalee, Yungmanni, and Koodangie people, whose social structure forms the subject of the present article.

No. 6 represents the hunting grounds of the Koorangie, Mudburra, Tooimbol, etc., on upper Victoria river. Particulars of their intermarrying divisions have been given.³

No. 7 refers to the Geelowng, Oolwunga, Wartaman, and Halurra tribes on the lower Victoria. Their eight sections have elsewhere been tabulated.⁴

No. 8. On Ord, Fitzroy, and Margaret rivers and their tributaries are the following tribes amongst others: Nigena, Keha, Lunga, and Mayoo, whose eight sections have also previously been given.⁵

On Sturt creek and on Ord and Victoria rivers certain totems are more generally known, and appear to be invested with greater importance, than others. Among these are the white crane, or spoonbill, and the eaglehawk.

No. 9 is the territory of the Meening, Jarroo, and Munga tribes, inhabiting Sturt creek and stretching southeasterly, meeting No. 10 on the map. Their eight divisions are particularized in a previous paper.⁶

I now wish to add lists of totems attached to certain pairs of sections who are related as father and son alternately from

¹ *Ibid.*, vol. XXXII, pp. 251-252.

² For their divisions see *Proc. Amer. Phila. Soc.*, Phila., vol. XXXVIII, p. 77, table 3.

³ *Ibid.*, p. 78, table 4.

⁴ *Journ. Roy. Soc. N. S. Wales*, vol. XXXIII, p. 112, table 6.

⁵ *American Anthropologist*, N. S., vol. 2, p. 186.

⁶ *Journ. Roy. Soc. N. S. Wales*, vol. XXXIII, p. 112, table 7.

generation to generation. The section names given in the work last quoted will again be used.

The Choongoora and Chabalye sections have the following totems: Eaglehawk, water-snake, pelican, tree-snake, fish, mosquito, curlew, desert-quandong, death-adder, sugar-bag, centipede, stone spearhead, shag, cockatoo, rat, wasp, nut-wood, grasshopper, grass, pigeons (all kinds), plain turkey, ants, whistling-duck, and native bee.

The totems of Chowan and Chowarding are as follow: Eaglehawk, certain stars, brown hawk, native dog, sun, rain, coolabah tree, wild potato, black-head snake, clouds, thunder, ibis, water-hen, borer tree, native-companion, black duck, and scorpion.

To the Chambeen and Changalla sections the undermentioned totems belong: White crane, galah parrot, lignum bush, opossum, wind, copperhead snake, iguana, mopoke, moon, lightning, and frog.

Chagarra and Chooaroo are allotted the following totems: White crane, blood-wood tree, mussel, kangaroo, native cat, rock wallaby, wild orange, bilbee rat, wood duck, crow, and porcupine.

In consequence of the alternative rules of intermarriage, of which mention has been made, certain totems are common to the four sections Choongoora, Chabalye, Chowan, and Chowarding, and other totems are common to the remaining four sections above mentioned.

No. 10 represents an aggregate of tribes, among which may be enumerated the Ulperra, Illyowra, Warramonga, Kaitish, and Wolpirra, whose hunting grounds are from Tennant's Creek to Alice Springs, extending some distance on either side of the overland telegraph line from Adelaide to Port Darwin. The names of the sections and the rules of their intermarriage have already been particularized.¹

The names of the sections in each of the tribal aggregations, Nos. 1 to 10, differ somewhat, but the principle is the same

¹ *Journ. Roy. Soc. N. S. Wales*, vol. XXXII, pp. 71-73; vol. XXXIII, p. 113.

in them all. The curved line (—x—x—) on the map from the Gulf of Carpentaria to the Indian ocean is the southern limit of the Wombya organization. All the tribes adjoining this boundary on the southwest, south, and southeast, possess a divisional system comprising four sections only.

In their initiatory rites circumcision and introcision are practised, the former by means of a piece of stone chipped or ground to an edge, the latter with a stick prepared for the purpose or a smooth stone of requisite size and shape found in a watercourse. Throughout the region represented on the map no woman is allowed to marry until the operation of introcision has been performed, nor can a man marry until after the ceremony of circumcision has taken place.

Among the tribes on Fitzroy river, Sturt creek, and at other places, in the event of the death of a child, the mother is compelled to carry its body about with her for several weeks and in some cases for months. If a woman's husband, or an adult son, dies, the wife or the mother, as the case may be, is not allowed to eat flesh for a long time, nor is she permitted to speak to anyone, but must communicate by signs only, until the father of the deceased bites her on the palm of the hand. This breaks the ban of silence, and she may then converse with her people as before.

In cases of death from snake-bite, or the result of an accident of any kind, the body is placed in a tree on a platform of sticks, eight or ten feet from the ground, and is covered with boughs, accompanied by the weapons of the deceased. When the death is caused by violence, the body is not buried but is left where it lies. In other cases the corpse is interred.

Owing to the barren character of most of the territory dealt with in this paper, it is only on the rivers and creeks that water can be relied on throughout the year. Back from these water-courses there are weatherworn holes or depressions in rocks, known as "rock-holes," in which water collects during rainy weather. There are also a few small springs at wide intervals

where a limited supply of water can be obtained. In times of drouth these rock-holes and most of the springs become dry, and the natives are compelled to keep in the vicinity of the rivers and watercourses; but as soon as the rain comes in sufficient quantities to replenish the rock-holes and revive the springs, the people make an exodus into the back country and remain there as long as the water lasts, because that is the only time they can pursue the game and obtain other foods in those parts of their hunting grounds. They proceed first to where the water is known to disappear most rapidly; then they go to those places in rotation where it remains longer, and in this way utilize their water supply to the greatest advantage. They sometimes carry water in bags made from the skins of small animals, such as wallabies and opossums, when going on hunting expeditions into waterless country.

GIUSEPPE MAZZINI — IDEALIST. A CHAPTER IN THE EVOLUTION OF SOCIAL SCIENCE

By SWAN M. BURNETT

"Earth shows to heaven the names by thousands told
That crown her fame :
But highest of all that heaven and earth behold—
Mazzini's name."

—A. C. Swinburne.

The world's indebtedness to the idealist is seldom canceled, for the reason that the day of full reckoning is usually antedated by the death of the creditor. With rare exceptions he is a man born much ahead of his time, and, in advance of his fellows, enters the wilderness of the world's unsolved problems and blazes a path which the following generations, pushed on by the *vis a tergo* of the advancing crowd, appropriate and follow with the usual self-satisfaction of new discoverers.

His remains, still grasping in his skeleton fingers the banner of "Excelsior," are to be found on some hilltop where he finally fell by the wayside in his last effort to point the way to still sublimer heights, and the appreciative few mark the spot as a mile-stone on the devious and difficult way of progress.

This separation of the idealist from the multitude is of necessity, and he exists only because of his discontent with present conditions. The conditions he demands have yet to be made. He deals in futures, while the would-be practical man knows only the present, and, alas, commonly too little of that, looking behind him rather for an example to follow than ahead for an ideal after which to reach. For this "dreamer of dreams" your practical man has a contempt which is ill-concealed, and, wrapping himself in the garment of satisfaction with things as they are, he thanks

his God that it is as well with us as it is, and that he, "like the idle singer of an empty day," is not called upon to "make the crooked straight."

And yet in the ordering of a universal progress, the idealist must take his place as an indispensable factor. All ages have had him, all countries possessed him. He is one of the natural elements, like air or water. He may be likened to one of the primeval forces through which Nature is eternally working out the problems of the universe. He is sometimes called a prophet, sometimes a poet; commonly he is both. He is always a seer. His crying aloud in the wilderness is at times disturbing to the people wallowing in their sloth, and to stifle their consciences they often rise up in their might and silence him, in one way or another. He has been ignored, treated with contumely and ridicule; he has been burned and hanged and tortured by all the diabolical means that the ingenuity of man could devise, and yet he and the thing he represents are never made way with. Like compressed air, or any confined force, he is always ready to burst forth when pressure is relieved.

He is necessarily of the minority—often helplessly so. But that is not a cause of great disturbance to him, for one of his prime qualities is a certain divine patience, and he is, above all things, an optimist. This is his crowning glory, and indeed the justification of his being, for if he did not believe in himself and in the final outcome of his faith as to the best in humanity, his claim to being a prophet and seer would be as aimless and futile as the frivolous chatterings of the Philistines against whom he is ever arrayed in mortal combat.

This heaven-born belief in the triumph of the best is equaled only by an all-comprehending altruism which is indeed the groundwork of his creed. "The other man" is always the burden of his cry. "He also is my brother, therefore I have need to consider him. I cannot rise if he fall—and I, if I be lifted up, shall draw all men unto me." This is no mere vulgar egotism—no

vaunting of an ignoble vanity. It is only the recognition of a common possession of that divine spirit which stamps man everywhere as of the same origin and a like high destiny.

Since history began to be written we have the records of such men among all peoples. In fact it is they and they alone who make history. The tumults that have kept the world from stagnating and out of which progress has been evolved, have been mostly of their making, and it is their ideas, or modifications of them, that have finally survived. Every revolt against wrong, every uprising against oppression, has had an ideal back of it which was not only at variance with the opinions commonly accepted at the time, but meant death to tradition and the prevailing prejudice. But the triumph of the ideal, though tardy, is sure, as God himself is true, and the despised and persecuted are finally brought to honor and reverence. On that is based the abiding faith and confident hope of those who are struggling now, as men like them have struggled through the ages passed for the amelioration of the condition of their fellow men and the establishment of a social order which shall give to every member the opportunity to develop the highest and best that is in him.

It is to an idealist of this exalted type that I would do honor at this time by reviewing briefly—in an altogether unsatisfactory manner, it must be acknowledged,—some portions of his labors in the field of social science, with the underlying principles for which he contended with such courage and persistency as have been rarely equaled in the history of human endeavor. Not that the labors of Mazzini have failed of recognition at their true worth in certain high quarters, nor that his meed of praise has been withheld among the coterie which gave him a master's love and reverence; but I fear the part he played, when the principles which are now recognized as the common property of all advanced sociologists were in the throes of evolution, has not always lingered understandingly in the memories even of those who are working along the same lines and toward the same end.

If, therefore, we can recall, for a brief season, the significance of some of that work as a factor in throwing down the barriers that are obstructing the onward march of civilization in its highest sense, it may serve not only as a lesson in appreciation of his great worthiness, but may spur us on in our own endeavors at solving some of the problems which lay so near his heart and which remain yet with us for our earnest study and conscientious action.

Giuseppe Mazzini was born in June, 1805, in the city of Genoa, of highly connected and cultured parents, his father being a physician and professor of anatomy in the university, and his mother a woman noted not only for her great physical beauty but for the fine qualities of her mind and decisive character. He was himself by no means physically strong, and it was only when he had attained the age of six years that he could walk firmly. Nevertheless he was able to enter the university at the age of thirteen, and during his five years' residence there was distinguished alike for the high quality of his intellect and his generous and noble disposition. Walking one day, as a child, with his mother along the streets of his native city, he saw one of the refugees from the unsuccessful Piedmont revolt of 1821, who held out to him a white handkerchief on which were inscribed the words "For Italy's Proscribed."—"Then," he says, "was for the first time presented to me the thought that one might and therefore ought to struggle for the liberty of one's country. The idea that there was in my own country a wasting evil against which one must have to struggle; the idea that in that struggle I might have to take part, flashed before me, never more to leave me." He carried the thought with him to the university halls, and it mingled with and formed an inseparable part of his studies and meditations.

He knew no youth in the ordinary acceptance of the term and as other young men know it. Already he felt, as did his Master 1800 years before, that he must be about his

Father's business, and that the burden must be taken at once, for the time was short and the laborers few. A subdued but uncontrollable melancholy settled upon him, and to outwardly typify his inward sorrow and sympathy with Italy's and the world's unhappiness and calamities, he dressed himself always in solemn black, a custom he continued during the whole of the rest of his life. This might seem an act of affectation to some, but in a man of Mazzini's stamp it was not so. Never was there a man who was less of a *poseur*, notwithstanding the natural dramatic instincts of his nationality. The act only shows how completely the idea of the *Weltschmerz* had permeated his being, and how wholly he had consecrated himself to the accomplishment of Italy's freedom and unity and the solidarity of humanity. He did it with the same solemn reverence and the same divine purpose as the nun when she assumes the veil which shall seclude her forever from the world's lightness and frivolity.

On leaving the university he studied law, and had fair promise of success in the practice of his profession had he chosen to continue it. His work in behalf of the poor and oppressed, for whom he was henceforth to expend all the energies of his soul, attracted attention, and his future career seemed assured. But the arena was not broad enough to satisfy the cravings of his mental activities. Destiny and his natural bent led him to the pen, and he wrote his first article for publication in 1826. It seems almost prophetic that he who was himself to be an exile for all the remainder of his life should select as his first subject of literary treatment that other famous exile who, like himself, was spurned by the people he loved and cherished with the deepest devotion. Even in that first article on Dante, he ran so counter to the tenets of the classical, as opposed to the romantic, system of literature then prevailing, that the *Antologia*, to which it was sent, refused to print the essay. Thus early he assumed that position in respect to all forms of art which he ever after maintained as the only one consistent with the unity of art and life.

"There are," he says, "two errors which threaten art: the theory that art is an imitation of Nature, and the theory that would make self-worship its ruling law and has created the formula of 'art for art's sake.' Art does not imitate, but interprets. It searches out the idea dormant in the symbol in order to present the symbol to men in such form as to enable them to penetrate it to the idea. Art is not the fancy or caprice of the individual. It is the mighty voice of God and the universe as heard by the chosen spirit and repeated in tones of harmony to mankind. The artistic formula 'art for art's sake' is as atheistic as the political formula 'each for himself,' which may for a few years rule the actions of a people in decline, but can never guide a people arising to new life and destined to fulfil a great mission."

Thus, in his estimation, all faculties, all powers of the mind, and all activities—individual and social—as a race, are subservient to the one purpose of formulating and exposing the idea as expressed through the highest conception of life of which men and women are capable. In the battle that raged then, as it has done, with lesser activity, ever since, between the classicists and the romanticists, he cut himself loose from tradition and precedent and unfalteringly and unequivocally arrayed himself on the side which gives the freest opportunity for development and growth. As to all idealists, so to him, the past offered most of that which was to be shunned rather than followed, and we could only

. . . . "rise on stepping-stones
Of their dead selves to higher things."

That was indeed the keynote of all that followed in the teachings of Mazzini. Let the dead past bury its dead, reverently and with affection for its virtues that were noble in their time; but no seed can quicken and bear fruit except it die. Opinion should be ever in a state of flux: life exists only in movement: crystallization is but another name for death—it is the end. To him

"romanticism" in Italy meant a struggle for liberty against the oppression of tradition which held the people in a death grip: "the battle," as he defines it, "of independence fought in the name of our own individual inspiration and the collective thought of our country against all forms and rules not of our own choice. . . . Truth is one and governs every manifestation of life. Every stage of the education of humanity or of a single nation is presided over and directed by a social thought, expressing and representing the degree of progress in course of achievement. . . . The special aim of art is to reduce thought to action."

How contrary to the ordinarily accepted picture of the idealist is this! The real idealist is of necessity a man of action. He feels that his thoughts must live, that his ideas must have an embodiment in human activity. If they do not, they are as Dead Sea fruit with ashes bitter to the lips.

Place a temperament of which these are the characteristic and deeply rooted principles, in the environment of the Italy of that period, and the Mazzini that developed followed as naturally as the day the night. Had he lived in America, he would have been a professor of literature in Harvard University, an active member of the Anti-slavery League, and a Unitarian, passing his peaceful but active days under the friendly shades of the elms at Cambridge. But alas! how different was the sunny Italy of 1828! It is almost impossible for us in this country and at this time to properly realize the conditions as they then existed, not only there but throughout the whole of Europe outside of mountain-girdled Switzerland. The people everywhere were crushed to the very earth under the heel of authority. Everywhere the heavy hand of tradition, mostly under the cloak of religion, fixed its unrelenting grasp upon the masses, and the very breath of their life was throttled. In France, Germany, and Hungary it was bad enough — but it was in Poland and in Italy that the degradation reached its profoundest depths. Hope seemed to be giving its expiring sigh.

The despotisms of the middle ages and of feudal times had their horrors, their barbarities, and their brutal injustices, but they also had something of the human virtues which often accompany the crude or natural vices of vehement personal passion. There were valor and heroism and love and personal devotion and self-sacrifice as counterbalancing and redeeming traits. Authority was then too easily lost and was too uncertain a possession to impose for long its deadening weight upon the people at large. Authority rested, for the most part, in the strong right-arm and the loyalty of the subjects of the man who led. It was only later, when authority was assumed to be from God, and the divine right of ruling became established under the sanction of ecclesiasticism, that real tyranny was fastened upon the people and they became the mudsills on which the magnificent structure of social aristocracy was to be erected. Then it was that the true dark ages set in, and under its blighting shadow the new-born civilization paled and came near withering to its decay. To speak of freedom was to preach heresy and commit treason at the same time. Not a corner in all of Europe, except little Switzerland, where a voice for liberty, now stricken down and bleeding at every pore, could be heard outside a prison wall!

Place a temperament like that of young Mazzini, as I say, in an environment such as this, and the product could be nothing else than what it was. Exquisitely sensitive to all human suffering, sympathetic to the point of painfulness, highly imaginative, profoundly conscientious, and deeply religious, he could view only with dismay and a righteous indignation the scene that confronted him at his own door and wherever he turned his gaze over the broad expanse of the European continent.

Forced by an uncontrollable impulse to do something or to make a stand of some kind for the right, he associated himself with the Carbonari, the only organization then known which had for its object the alleviation of existing conditions. It is not known, or at any rate it was never proven, that during his

connection with that body he was guilty of any overt act, or of violation of any one of the very stringent laws then in operation; nevertheless he was arrested and cast into prison. His father, inquiring of the governor as to the reason of this imprisonment, was told that "his son was thoughtful and reticent and was fond of taking solitary walks at night, and the government disliked young men of talent whose thoughts they did not know." I wonder if the young men of America can adequately measure the distance which separates the proud position of freedom, bound only by conscience, which they occupy today, and that of the pale Italian youth of some seventy years ago, whose unexpressed thoughts were deemed a menace to the authority that was? He was confined in the fortress of Savona on the west shore of the Gulf of Genoa. After some months he was released on condition that he live not in Genoa but in certain prescribed districts; and thus at the age of twenty-five years his period of exile began, to end only with his long and arduous life. Henceforth, because he loved his fellow man and was willing to work with and for him to make his life a better and nobler one, he was to be a wanderer over the face of the earth, to know no love of family, to have a home only in memory, living not where he would but where he might, his local habitation determined by the despotism which was thirsting after his blood, and which he, in his turn, was seeking with all his might to destroy. The conflict was now fully entered upon which he felt to be not only irrepressible but to the death. No compromise was expected on either side; no quarter was asked or given.

While still confined in the prison at Savona, his mother conveyed to him the news that Poland had risen,—"*Polonia insurrexit*," and his first words, when he met her on his release, were, "Tell me about Poland." Thus at the very beginning he made the cause of the oppressed of all nations his cause—the cause of the awakened sense of justice against the authority of tradition. Through Italy he would work for humanity throughout the

world, linked as he believed all peoples to be in the working out of the common destiny. He had now found his vocation. To liberty and social progress his life with all its energies of mind and body was from this time forward to be devoted, unsparingly and with no reserve. Nothing was held back; family affection, which was stronger in him than in most men, his own strong emotions, every personal desire or inclination, all were firmly put aside. Henceforth his dominating thought was Italian independence and unity. Nor was he possessed of any wild, quixotic ideas as to the manner of meeting the issue. He was, on the contrary, thoroughly impressed with the seriousness of the undertaking and the almost forlornness of the hope of success against such fearful odds. He had a correct measure of his own strength and of that of his adversaries. And probably the most remarkable feature in the character of this remarkable man was the calmness, deliberateness, and freedom from anything like theatrical vaunting of everything he did. Opportunity for posing and for picturesque attitudinizing and dramatic appeals was abundant during the long, eventful period of which he was the central figure, but at all times sound sense and cool judgment were at the bottom of his plans, and when they miscarried it was nearly always through the indiscretions or inefficiency of others.

Already before his release from prison his resolve for the initial step was taken. Instinctively he felt that the hope against tyranny must be the youth, who had not yet had the spring of life taken out of them by the unrelenting hand of oppression. To them he could appeal with faith in their coöperation, and so he planned the association of "*Giovine Italia*." It was only after his escape from Switzerland, and his journeying thence to Lyons,—where the treachery of Louis Philippe betrayed the cause that had trusted to his promises for help and scattered them to the four winds of Heaven,—and from there to Marseilles by way of Corsica, that the opportunity came to complete the organization and put it on a sound working basis. The heart of Young Italy

must not only be fired, it must be informed. He realized the fundamental truth that republics have their secure foundations in education, in knowledge, and that in the promulgation of these the press is a necessary agent. An organ was therefore essential, and they began at once the publication of *Le giovane Italia*, smuggling it in the vessels plying along the shores of the Mediterranean to the various Italian ports, for distribution, by properly selected parties, among the friends of liberty.

From 1831 to 1833 the work at Marseilles went on, under what stress of poverty and suffering no one will ever know; for that little band of Young Italy took no account of them, satisfied if only the work were done at any sacrifice. "These were two years," said Mazzini himself in his old age, "purely and gladly devoted, such as I would desire for the rising generation." There were then only the enemies, open and declared, to face. The heartrending knowledge of betrayal and treachery was yet to come. Under the leadership of a man of Mazzini's strength, the power of Young Italy could not fail, not only in arousing the wrath and increasing the vigilance of the Italian government, but also in attracting the attention and in arousing the admiration of the friends of freedom elsewhere throughout Europe. Young Italy soon became recognized as a beacon light in the pervading gloom of despair, and it was hailed with delight by their kindred spirits in France, Germany, and Poland. To anyone who can read history aright, it must be clear that there and then began the fermentation whose activity never ceased till every portion of Italy from the tip of the peninsula to the farthest mountains of Piedmont and the shores of the Adriatic, were permeated with the leaven of liberty, and Italian unity was assured.

Other efforts, sincere in conception and prosecuted with courage, had preceded this one, but they had failed, mostly because they lacked just that quality which made Mazzini's unique in the history of revolutions. "It was," as he said, "a triumph of principles — a religion." In studying it, it will be seen that man as

an individual had no part in the scheme; personality was abolished. It was to avenge no one man or set of men. Its sole purpose was to bring back Humanity to the throne from which she had been ruthlessly thrust by self-appointed Authority. Other agencies were at work later in connection with Young Italy and the eternal destiny which guides the actions of nations, as of men in the accomplishment of the final result, and others reaped the benefits and most of the glory; but the guiding spirit and predominating influence were the ideas formulated and for the most part put forward by Mazzini. Though his more immediate concern was for Italian independence and unity, the principles for which he contended were universal and formed the birthright of all people. He inscribed on his banner "Liberty, equality, fraternity for all men, and for Italy, independence and unity."

Rising above the narrow claims of mere nationality, he entered upon the higher plane of universal brotherhood, and, harkening to the voices from Germany and Poland, he organized "Young Europe" in Berne in 1834. It is this breadth of view and extent of grasp which separates Mazzini from most reformers and revolutionists of his own, and all other times, in fact. He had no personal, hatred of individual tyrants nor of the tools of despotism. He regarded them simply as forces, like any other forces in nature, to be crushed out or controlled when harmful, or to be utilized when found necessary for the accomplishment of his own ends. Nothing illustrates this trait better than his attitude toward that arch-traitor Charles Albert of Savoy. "For all my aversion to Charles Albert," Mazzini says, "the executioner of my best friends, for all the contempt I feel for his effete and cowardly nature, for all the popular tendencies fermenting in me, if I could suppose him to be so much as ambitious of unifying Italy for his own account, I would say Amen!"

How widely different was his position regarding the individual from that of Carlyle the hero-worshiper. To Carlyle the individual, as representing the ruling power, was everything. He

stood for force, for the means of accomplishing ends, and so far was sent of God — a divine agent,—not seeming able to recognize the fact that back of him was that tremendous accumulated energy of the people without which he would be only as sounding brass. Carlyle never seemed able to comprehend that, and so his philosophy — so far as his snarling cynicism can be called a philosophy — came to nothing. It was not possible for it to come to anything, because it had no secure foundation on which to rest, nor any means through which it could reach up to an ideal. No one saw this more clearly than Mazzini, and no more critical or just appreciation of Carlyle's position on sociological subjects has ever been put forward than that which he published in 1843 in the *Westminster Review*. Both men were agreed up to a certain point. The sickness of the time was to each the burden of his thought and the agony of his soul. Carlyle had no remedy to offer for this but a despairing trust in the mysterious workings of Providence. Mazzini had an unswerving faith in the final healing of the nations through liberty and the collective coöperation of the people. No more accurate analysis of Carlyle's mind has been made than is to be found in that essay. "A perpetual antagonism," says Mazzini, "prevails throughout all he does; his instincts drive him to action, his theory to contemplation. Faith and discouragement alternate in his works, as they must in his soul. He weaves and unweaves his web, like Penelope; he preaches by turns life and nothingness; he wearies out the powers of his readers by continually carrying them from heaven to hell, from hell to heaven. He desires progress, but shows hostility to all who would strive to progress. The past has everything to expect from him, the present nothing — not even common justice."

Mazzini was, on the contrary, an idealist who was at the same time a man of action. The *laissez-faire* idea found no response in him. An actual interference is necessary so long as the masses are steeped in ignorance of their condition and unaroused to the

need of helping themselves. Speaking of this class of man he says, "Alas! this man's name is million. He is met with on every side. He constitutes nearly three-fourths of the population of Europe. How can you raise the fallen soul except by saying to him, by telling him in acts, not in reasonings, which he does not understand, 'Thou, too, art man; the breath of God is in thee; thou art here below to develop thy being under all its aspects; thy body is a temple; thy immortal soul is a priest which ought to do sacrifice and ministry for all'?"

We, in this country, who have so long basked in the sunlight of liberty, and to whom words like these seem like trite platitudes, can with difficulty realize that at the time they were uttered they were treason and heresy in almost every country in Europe. It is only when we bring ourselves back to a comprehending sense of this fact that we can properly understand the man and the effort he was making in the cause. We can comprehend it still more fully, however, when we bear in mind that his watchword was "Duty." Everywhere and always he harked back to this as the incentive and foundation of all effort. Through Duty he looked for a redemption of the world from its load of suffering and sin. This was the activity that must be brought into play in carrying out the divine purpose of bringing man into the rightful possession of his own soul.

"Duty," he explains, "consists of that love of God and man which renders the life of the individual the representation and expression of *all* that he believes to be the truth, absolute or relative. Duty is progressive, as the evolution of the truth; it is modified and enlarged with the ages; it changes its manifestations according to the requirement of times and circumstances. There are times in which we must be able to die like Socrates; there are others in which we must be able to struggle like Washington: one period claims the pen of the sage, another requires the sword of the hero. But here and everywhere the source of this duty is God and his law; its object, humanity; its guarantee,

the mutual responsibility of men; its measure, the intellect of the individual and the demands of the period; its limit, power. . . . The question of the present day is the perfecting of the principle of association, a transformation of the medium in which mankind moves; duty, therefore, lies in a *collective* labor. Every one should measure his powers, and see what part of this labor falls to him."

The most advanced sociologist of the new school has nothing further than this to offer in regard to the principles on which human society should be based in order to bring about the greatest amount of happiness for all and the abolition of the evils under which our civilization groans. Mazzini was the first to incorporate into a system for the world's betterment the idea of organized social forces as an entity and a fundamental power. He recognized clearly, what is just now dawning upon many students of sociology, the fact that the common collective mind of man is the most powerful factor in the development of individual character, which in its turn reacts upon society as a whole. "*You and I*," he said once in conversation with a friend, "is an entirely different thing from either *you or I*."

Viewed in the large, this was the foundation of all his schemes for the perfecting of human society and the first and necessary step toward the consummation of his ideal. Through its influence and by the help which it alone could give, were the downtrodden to be uplifted and placed upon the sure footing of self-respect and self-reliance. Not that individual effort was to be disregarded, but that effort must be put forward in the direction of, and in consonance with, the general tendency of social progress. The final effect of all must be, of course, the perfection of the individual; but this can come to him only as he is a part of a whole, of whose general perfection he shall partake; and it is only under such conditions of personal freedom and coöperation that individuality can have the proper opportunity for the unrestricted development of all its powers for good. To this end the

structure-building must be begun at the bottom—with the people. With Mazzini it was always the people. The strength of a nation is measured by the intelligence and unity of its masses. What divine insight must have been his, who, amid all the conflicting conditions of ferment, revolution, aristocracies, ecclesiasticisms, and anarchy which were at that day racking Europe to its foundation, could see, with the unfaltering eye of faith, that the sole remedy for the malady was the freedom, intelligence, and unity of the mass of the people. The insistence on this, as an essential in his sociological system, explains the position he assumed toward other revolutionary enterprises and toward the ecclesiasticism of the time. Nothing had value in his eyes as a social factor unless it led to progress—to evolution. The potentiality of the soul of man he conceived to be illimitable, and anything that put bounds to it a crime in the sight of God and in contravention of the eternal law.

Mazzini should be classed with Darwin and Spencer as one of the founders of social evolution. Scientific sociology had no existence in his day, certainly not at the time he began his career, and his name is not to be found, so far as I am aware, in the history of its development in modern times; and yet there can be read in the lines and between the lines of the six volumes of his published writings all the essential principles for which the most advanced sociologist of the day will contend as acceptable and necessary. It will be found upon examination that his schemes for social advancement were based on the moral rather than on the purely intellectual side of our nature, though along strictly scientific lines, and for that reason they perhaps merit closer study. The first essential to progress and development was, in his opinion, to rouse the human soul to a full appreciation of its moral responsibilities, such as he details in his essay on *The Duties of Man*.

At the present time, when so much store is set upon the material interests by which our rate of progress is gaged, it may not

be without profit to have the claims of the spiritual side of our nature presented for consideration as a basis on which sociologic advancement is to be founded. "Material ameliorations are essential," he says, "and we shall strive to attain them, not because the one thing necessary to man is that he should be well housed and nourished, but because you can neither acquire a true consciousness of your own dignity nor achieve your own moral development so long as you are engaged in a constant struggle with poverty and want. . . . It is necessary that you should labor less so that you may consecrate some hours every day to your soul's improvement. . . . You are bound, therefore, to strive for all these ameliorations in your conditions, but you must seek them as a means, not as an end. . . . Seek them in order that you may be more virtuous, not in order that you may be materially happy."

The purpose of this leisure is education. "Education!" he says. "My whole doctrine is included and summed up in the grand word. The vital question in agitation at the present day is the question of education. . . . Education is the bread of your soul. Without education you are incapable of rightly choosing between evil and good. You cannot acquire a true knowledge of your rights; you cannot attain that participation in political life without which your complete social emancipation is impossible: without it your faculties lie dormant and unfruitful. . . . Education addresses itself to the moral faculties, instruction to the intellectual; the first develops in man knowledge of his duties, the second gives him the capacity of achieving them. Without instruction, education would be too often inefficient; without education, instruction is a lever deprived of its fulcrum."

Heart and soul as he was with the promoters of the French revolution of 1789, he saw, as no one else among its friends seemed to see, the great defect through which that fearful struggle was in danger of failing to accomplish its highest purpose, and wherein it did actually fall short of its full fruition.

"The French revolution," he says, "must be considered not as a program, but as a summary; not as an initiation of a new age, but as the last formula of an expiring age." The formula of "liberty, equality, and fraternity" he knew, as well as anyone could know, was indeed a magnificent achievement, as compared with the conditions which preceded it; but it was left only as a formula, as he says, and the working out of the problem of man's duty needed yet other factors. It embodied and set forth the triumph of the individual, and there it rested. But that was in itself not enough, and it would not be difficult to trace, from this point of inertia, the decadence of France as we see it today. The revolution terminated one era, but did nothing toward starting a new one. "Liberty" was good, "equality" before the law was good; "fraternity" in the sight of God was good, but these were not in themselves sufficient for the evolution of the highest capabilities of man. There was needed yet something else, and that something was association — combined labor toward a common end.

"The three terms, 'liberty, equality, fraternity,'" he says, "mark out the circle within which all our social philosophy revolves; it forgets that *association* is the mother idea of our age, an idea unknown to the official inspiration of the revolution." Of what value is liberty if there be no action, or it be turned into license? Equality has only the virtue of opportunity, and if it be not availed of it signifies nothing; while fraternity is a mockery if we take not our brother by the hand and help him to higher things.

"When," he says again in this connection, "you have raised men's minds to believe in the other principle, that society is an association of laborers, and can, thanks to that belief, deduce, both in theory and practice, all the consequences, you will have no more castes, no more aristocracies, no civil wars, no crises. You will have a *people*. The republic, at least as I understand it, means association, of which liberty is only an element — a necessary antecedent. It means association, a new philosophy of life — a divine

ideal that shall move the world, the only means of regeneration vouchsafed to the human race. Opposition is a mere instrument of criticism. It kills; it does not give life. Only a new ideal can thrust the corpse aside and move forward in search of a new life. For this reason the revolution of '89—a revolution essentially protestant in its character—ended by enthroning criticism, by affirming the brotherhood of individuals, by organizing liberty. . . . Brotherhood is certainly the basis of every society, the first condition of social progress; but it is not progress itself. . . . Only from a conception of humanity can we deduce the secret, the standard, the law of life for man. Hence the necessity for the coöperation of all, for the harmony of our labors; in a word, for association, in order that the work of all may be accomplished. The sacred word Humanity, uttered with a new significance, has discovered, to the eye of genius, a new world, which had hitherto been no more than a presentiment; a new age has begun."

These words, written in 1835, fell upon the ears of the monarchies of continental Europe as the ravings of a madman or the chimera of a fatuous dreamer. "Divine right" and "authority," backed up by tradition, were the engines of power that were grinding to powder the souls of the great mass of mankind, and anything that contravened them was heresy and treason. We, in this country at least, today find in them the clear reasoning of the seer—the words of the inspired prophet. Brotherhood, humanity, association,—these are the terms which, in their broadest import and with the significance attached to them by Mazzini, we find as the underlying principles of all the sociologic systems that meet the demands of a progressive humanity, aspiring to the goal of its highest ideal.

It is only by keeping this steadily and clearly in mind that we can understand rightly Mazzini's attitude toward the ecclesiasticism of the time: an attitude which is liable to be misunderstood and mistaken for an antagonism to a formal religion and all the

beneficent associations and influences which that can exercise upon man and society. A man whose nature was deeply religious even to the verge of asceticism, and whose idea of life was comprehended in the one word Duty, could not speak lightly or inconsiderately of any form of religion as such. A world without a religion as expressed in duty to God and man was to him incomprehensible.

In that marvelous essay on *The Duties of Man*, after making a quotation from the New Testament illustrative, and in a sense prophetic, of the idea of progress, Mazzini says: "Thirteen hundred years after the above sublime words of Jesus were written, a man, an Italian, the greatest of Italians, wrote the following truth: 'God is one. The Universe is the Thought of God; the Universe therefore is one also. All things participate in the Divine Nature, more or less, according to the end for which they are created. Man is the noblest of created things. The capacity of perfectibility is infinite in man. Humanity is one. God created no useless thing. Humanity exists, therefore there must be a single aim for all men, a work to be achieved by all. The human race must therefore work in unity, so that all the intellectual forces diffused among men may obtain the highest possible development in the sphere of thought and action. There exists, therefore, one universal religion for the human race.' The man who wrote these words was called Dante."

"Of the ancient religions of the East," he says further, "some had conceived of God as solitary, supreme, beyond the reach of the human intellect, menacing as fate; others, as sometimes blessing, sometimes cursing nature. All of them neglected man; none suspected the ray of the divine ideal that is in him, the bond that joins him to the Infinite. . . . The polytheistic religions expressed *man* and his spontaneous nature. They rescued him from a pantheism that oppressed him; they had glimpses of the fact that in a scheme of the universe man had a part, but they did not

succeed in defining that part. Greece and Rome nobly developed the idea of *Liberty*, but for one class of men only. Slaves existed, by doom of birth or conquest, side by side with citizens. . . . The Christian age came to complete the work done by polytheism, and to contemplate the *individual* in the other aspect, in his *external*, objective, relative existence. Its principal work, therefore, was to develop the idea of *equality*. The Mosaic religion had already established the vital dogma of divine *unity*. Christianity appropriated this dogma, and, advancing a step farther, withdrew it from the privilege of the chosen people, in order to diffuse it among all peoples. . . . The God of Christianity was the God of men who were necessarily brothers in him. . . . Christianity conceived the idea of liberty, that Paganism had worked out, added the idea of *equality*, and preached charity to the brethren. But it was a liberty purely spiritual, an equality of souls before God. . . . Religion was not life, but a reward promised for a life to be accepted on the earth such as it was. Christianity, setting aside its conception of Heaven and its slow engrafting dogma, and considering it in the historical relations with other religions, is, as I have said, the religion of the *individual*, and this constitutes its vital essence, its mission. . . . To save oneself not *through* the world, or by working *with* the world, but *in spite* of the world, is the supreme formula of Christianity."

In the new era of coöperation and association, the dogmas of the church, while still retaining a certain value to the individual, ceased to be a controlling influence in society. The individual had now merged himself into the world and became a part of it, and he must be saved *with* it and *through* it, and no longer *in spite* of it. With the establishment of the brotherhood of man in God and the sanctity of the individual, Mazzini believed the Christian era had concluded its mission. "A religion is never transformed," he says. "It exhausts the possibilities of life contained in the principles that created it, and then it dies, leaving

that principle among the number of acquired truths. A given end is never reached by an instrument designed for another purpose, . . . and if I am, as I believe, right, the Christian age is concluded, and we have now another conception of life, and travel in search of a new earth and a new heaven, and the first people who shall rise in the name of that conception, and with the faith that says 'I can,' and the energy that says, 'I will,' and cry to the other peoples, 'I am fighting for you all; follow me,' this people will give its name to an age."

This age must have altruism for its religion. It must hold as its cardinal tenets not only the brotherhood of man and the solidarity of humanity, but also the involved obligation of all working for each and each for all. Individualism will not thereby be cast down and degraded, but will become exalted by the recognition of its kinship, through universal brotherhood, with God, and thus be made to feel that to each component part belongs the glory of the whole.

It is not the purpose of this paper to follow Mazzini throughout the various activities in which he was engaged in his endeavor to realize the ideals of which I have endeavored to give some exposition. Most of them are now matters of written history. These record his flight from city to city, from country to country, his long exile in England where persecution and injustice still followed him; his participation in the various uprisings of the people of Italy; the glory of being for a day a triumvir of the Roman republic, and the treachery of France which despoiled that noble effort; his political and military association with Cavour and Garibaldi, both of whom reaped much of the glory that belonged to him; the final triumph of one of his ideals—the unity of Italy—not in the manner of his choice, but greatly through the influence of his labors; his death, in 1872, under an assumed name in Pisa, and his funeral in his native city with a national pageant that a king might have envied. All these are but the local or national aspects of a career which, in its breadth of conception and the

far-reaching results upon the civilization of his own and subsequent ages, has not been surpassed in its highly spiritual as well as in its distinctively human qualities.

His personality was in keeping with his own ideal. He inspired the love and confidence of all good men and women who came within the circle of that influence. No finer pen portrait of any man has been left to us than that given of Mazzini by the greatest representative of English letters living today—George Meredith—who, in his story of *Vittoria*, describes him as he appeared at the period of his highest mental and bodily vigor, and when he was accepted as the master-spirit of "Young Europe." It was during the uprising in 1848, and Mazzini is described as he made his first appearance among the troops on Mount Motterone overlooking the plains of Lombardy. "He was a man of middle stature, thin and even frail, as he stood defined against the sky, with the complexion of the student and the student's aspect. The attentive droop of his shoulders and head, the straining of the buttoned coat across his chest, the air as of one who waited and listened, which distinguished his figure, detracted from the promise of other than contemplative energy, until the eyes were fairly seen and felt; that is, until the observer became aware that those soft, large, dark, meditative eyes had taken hold of him. In them lay no abstracted student's languor, no reflex burning of a solitary lamp; but a quiet grappling force engaged the penetrating look. Gazing upon them, you were drawn in suddenly among a thousand whirling wheels of a capacious and a vigorous mind, that was both reasoning and prompt, keen of intellect, acting throughout all its machinery, and having all under full command: an orb'd mind, supplying its own philosophy and arriving at the sword stroke by logical steps—a mind much less supple than a soldier's; anything but the mind of a Hamlet. The eyes were dark as the forest's border is dark; not as night is dark. Under favorable lights their color was seen to be a deep rich brown, like the chestnut, or more like the hazel-edged sunset brown which

lies upon our western rivers in the winter floods when the night begins to shadow them. The side view of his face was an expression of classic beauty, rarely now to be beheld either in classic lands or elsewhere. It was severe; the tender serenity of the full bow of the eyes relieved it. In profile they showed but little of their intellectual quality, but what some might have thought a playful luminousness, and some a quick pulse of feeling. The chin was firm: on it and on the upper lip there was a clipped growth of black hair. The whole visage widened upward from the chin, though not very markedly before it reached the broad-lying brows. The temples were strongly indented by the swelling of the forehead above them: and on both sides of the head there ran a pregnant ridge, such as will sometimes lift men a deplorable half inch above the earth we tread. If this man was a problem to others, he was none to himself; and when others called him an idealist, he accepted the title, reading himself, notwithstanding, as one who was less flighty than many philosophers and professedly practical teachers of his generation. He saw far and he grasped ends beyond obstacles; he was nourished by sovereign principles; he despised material present interests; and, as I have said, he was less supple than a soldier. If the title of idealist belonged to him, we will not immediately decide that it was opprobrious. The idealized conception of stern truths played about his head, certainly, for those who knew and loved it. Such a man, perceiving a devout end to be reached, might prove less scrupulous in his course, possibly, and less remorseful, than revolutionary generals. His smile was quite unclouded and came softly, as a curve in water. It seemed to flow with, and to pass in and out of, his thought—to be a part of his emotion and his meaning when it shone transiently full. For as he had an orbéd mind, so had he an orbéd nature. The passions were absolutely in harmony with the intelligence."

Are the names of men like this to be writ in water? And when we in a short interlude, in our workaday life, recall their

virtues and contemplate the ideals which inform them, shall we not be infused with something of the same spirit which animated them; and can we not carry out into the world, for which they fought and suffered, a portion of the courage and faith which nerved their arms to action in the cause of a Common Humanity?

GRAMMATIC SKETCH OF THE CATAWBA LANGUAGE

By ALBERT S. GATSCHET

INTRODUCTORY NOTE

The remnant of the Catawba Indians resides in York county, South Carolina. This county borders on the state of North Carolina and is divided in two parts by Catawba river, which flows in a southerly direction and later becomes known as the Wateree and the Santee.

At the time of the writer's visit, in 1881, about eighty-five Catawba Indians were living in York county, and about forty more were engaged in farming in North Carolina, especially in Muhlenberg county. They are peaceable and quiet people, but without ambition or a manifestation of the spirit of progressiveness. For many years they have been slowly adopting the white man's ways, so that now probably not one-third of the population speak their native language or indeed know anything of it. In 1841 they ceded the area of their reservation, about fifteen miles square, to the state government, receiving an annuity in lieu thereof. They now retain only the square mile of land on which they reside and by means of which they gain a livelihood.

During the early historical period the Catawba formed part of an extensive confederacy of twenty or more tribes. They were distinguished for their warlike qualities, sometimes waging war at great distances from home.¹ A profusion of historical documents testifies to their prowess in war, but thus far no one has attempted to assemble this information in the form of a history.

¹ Adair (*History of the American Indians*, pp. 224-225) mentions about 400 warriors for 1743 and a confederacy of twenty-eight villages on Santee, Combahce, Congaree, and other rivers.

Catawba is one of the dialects of the eastern division of the great Siouan linguistic family. While the western portion of the Indians representing that family, settled beyond the Mississippi, has been known for more than two centuries, the eastern section has been recognized as of Siouan affinity since 1860 only, and but three dialects of it were studied and recorded, i. e., the Tutelo or Yésang, the Katába or Catawba, and the Biloxi. These present striking analogies with the western dialects in phonetics, grammar, and lexicon, and exhibit many forms of a more archaic character.

PHONETICS

The Catawba language is rather simple in its phonetic elements, for its vowels scarcely ever coalesce into diphthongs, and its consonants stand mostly by themselves instead of uniting into groups through vocalic elision.

The vowels are *u*, *o*, *a*, *e*, and *i*, with their respective lengths, *ū*, *ō*, etc., though most of the vowels are pronounced short. The language has also the neutral vowels *ɛ* and *ɔ*, the latter standing midway between *a* and *o*, as in English *all*. The umlaute, or sounds of periphasis (*ā*, *ō*, *ū*), exist in the Catawba alphabet, e. g. in *ōmā*, himself; *tshō*, small; *dūrōbi*, iron; but they are not in frequent use. *I* and *u* can also be pronounced with a hollow sound, when they are written *ɪ* and *ʊ*. Diphthongs are not a prominent feature of the language; most of them are adulterine, both vowels being still audible as separate sounds.

Vowels are frequently nasalized, as in *iti*, stone, which becomes *ɪ̃ti*, and in *nə̃pa*, something, which is transformed into *nə̃pã*, *nepā̃*. Nasalization also figures prominently in the Sioux dialect of Dakota.

The language presents the following series of consonantic sounds or articulations:

Gutturals: *k*, *g*, *χ*.

Palatals: *tch*, *dsh* (*ʃ*), *sh*, *y*.

Dentals: *t, d* (or *nd*), *s, n, m*.

Labials: *p, b, w, v, m, mb*.

Trill: *r*.

Spirant: *h*; when epenthetic it is written *ʰ*; *nuʰtu*, thorny.

The list shows that the dental and labial articulations predominate, and that the series of aspirates is but feebly represented. The surds also predominate over the corresponding sonants, as *k* and *p* over *g* and *b*. The sounds of *f, th* and *dh, z, ɣ* (the sonant of *χ*), and *l*, so conspicuous in the tongues of other Indians, do not occur in Catawba; and *sh*, which alternates with *s*, is used but rarely. Among the unfrequent sounds is also *v* (as in *yák tchivéré*, there I will be; *yélé nyenréféré*, ye will be), and *χ* (as in *taxtchéde*, kindle up!; *suxéré*, to run alongside).

But little tendency is manifested of vowels being crowded out by consonants, but when this occurs it is more frequently done in the initial part of words than elsewhere.

As in other American languages, it is found that in Catawba certain sounds at times permute or interchange among themselves, as in the vowels: *yáp* and *yóp*, tree, stick; *yánteru* and *ihánteru*, creek, literally "large water"; *nápère*, *ndʰprère*, and *noʰprère*, two; *yánire* and *yanírrire*, new; *dútshoʰré* and *dutchoʰré*, I ate; *yé*, *yáʰ*, and *yí*, man, Indian; *taró* and *tarú*, large; and in the consonants *dépé*, *dépáʰ*, and *nápá*, *népé*, *népáʰ*, one, somebody; *sák*, house; *súg-yop*, log-house; *manu-gísa*, and *mano-kísa*, low (lit., "on ground standing"); *díwiraʰré*, I burnt myself, and *yép widaʰré*, the wood is burning.

Only sounds produced by the same vocal organ or organs usually interchange, as dentals among dentals, etc.

ACCENTUATION

There is a general rule, which holds good for all agglutinative languages, that the radical syllable be emphasized above all other syllables of a word on account of its paramount importance. But when a word grows to the length of three syllables or more, a

secondary accent manifests itself which frequently overwhelms the primary accent of the radix whenever it is placed on syllables sufficiently important. In Catawba we note terms occasionally emphasized as follows: *tatkié*, comb; *yép-hi-l'*, wagon; *uks-itshiké*, rainbow; *katatsé*, fore part (bow of a boat); *yen-tashed*, warrior. Some suffixes of a demonstrative import are especially apt to divert the stress from the initial part of the word toward its end. But it must be kept in mind that the accent is not so much tied to a single syllable as in European languages; various influences cause it to shift, and then it assumes a rhetorical function. The deictic suffix *-ré*, *-ré*, in verbs and nouns, is always likely to draw the emphasis to the end of the word (*wit' newiranré*, I burnt my shoe; *dá'pa hapkutséré*, I lift, hoist something; *it'pastéré*, to meet upon the road); and this sometimes weakens the beginning of the word and produces vocalic elisions, contractions, etc. Curiously enough, the "urvocal" *é* often assumes the accent, as in *né'pa*, *dé'pa*, somebody, this being done under the influence of syntactic accentuation: *dik'sé kitséré*, I break with my hand; *hak-supsé dí'ta^aré*, I wash my shirt.

FORMATION OF THE WORD—THE RADIX

The radix is monosyllabic and ends usually in a vowel; but in many instances it is difficult to segregate it, with its ancient vocalization, from its derivatives. Catawba is a suffix language in derivation as well as in inflection; it is greatly given to compounding words,—nouns as well as verbs,—binary compounds being the usual form of compounding, though ternary compounds are not scarce.

In some instances the root shows a change in the vowel, but this is not of regular occurrence. Many nouns and verbs are formed by duplication and some by triplication of the radix. These are not by any means all of an onomatopoetic origin, and since they afford us a glance of the manner in which words are produced in this language, a list of them is subjoined.

SYLLABIC ITERATION

Verbs and nouns formed by syllabic iteration, especially duplication, are frequent in American languages, and the lexica of the Dakota dialects show many instances. In the list below there are brought together all the examples available.

It is natural that many of their number be of an onomatopoeic character. Such are the verbs composed with *hdtkire*, to shout, be noisy, which are indicative of noises of nature, or made by man or animals: *hahahdtkire*, to laugh (plural of subject, *hahd-ikere*); *wuwidhere*, to bark (as dogs); *wux-* in *wux-hdtkire*, to shout, hallo, bark; *wi-* in *wiwidhdtkire*, to mew; *kikihi-hdtkire*, to neigh (triplication); *pupuhdtkire*, to blow the bugle; *ehé hdtkire* and *ehésere*, to cough; *tchutchusere*, to pick at (as woodpeckers on trees); *kakd re*, to tick (as a watch or clock).

The idea of repetition and frequency is also vividly symbolized in such words as *para*para-i* and *pa*pa*he*, wheel, hoop; *kakdsere*, to spank (iteration of *kdsere*, to hit, strike); *kayokayó-hire túsé*, to wag the tail; *kapokapóhare* to pace (as horses); *titthire*, to gallop; *tchotchóhore*, to trot; *kwoakwasétre* or *kó'kó'sétire*, to fan oneself; *tuptúpure*, spotted, marbled; *hayak'here*, lightning, and it lightens; *kushwógwagi*, lightning-bug (*Lampyrus*); *kuyu*káyu**, marten; *tchuitchúpalo*, a species of worm; *tchintche'rip*, snowbird; *pareparesaré*, square (as a table or box); *nimit'nimit'ha yé hak pis*, pimple (on human skin).

INFLECTION OF THE NOUN

When considering substantives, adjectives, or pronouns under their inflectional aspect, we naturally look for signs of inflection for gender or sex, for number, and for case. Of all these Catawba is singularly devoid; and, *a priori*, we cannot expect inflection for sex in any American language, this feature being extremely rare on the western continent and even in the Old World, where only two stocks display it prominently.

Number is not expressed by a special suffix or sign joined to the noun, but terms pointing to plurality, collectivity, or distribution, like numerals, or like *agré*, *kéré*, sundry, several, will fulfil this function. Thus no forms exist for the dual or plural number. But number may be expressed by the transitive or the intransitive verb which accompanies the noun, and this makes special plural endings unnecessary. (See number in verbs, page 541.)

Inflection by case apparently does not exist in Catawba. Three case-relations are prominent in all languages,—the subjective, the objective, and the possessive or genitive cases. These are not marked by any separate ending or other sign in Catawba, as may be found from *yin-trá kun bariré*, I know that child; *ma wuyd díkét kitséré*, I break this rope with my hand;—where none of the objects (*yin-trá*, child; *wuyd*, rope) shows any form distinct from their subjective cases.

Examples in which possessive case-endings would or might occur, if any existed, are: *yáphá^a hínt*, bottom of barrel; *yáphá^a híssunó*, top of barrel; *kápá sú^atí*, gate of fence; *gus súk* or *kús súk*, cob of corn, lit. "corn's location." Evidently that which is expressed by case-endings in languages favored with them is here relegated to the postposition—a class of relational words named elsewhere "prepositions" from their placement in the sentence. These exist numerously in English, but few of them are so ground down as to form transition to a case-suffix. This, however, is the case with *-iang*, in *wihash-íang sapt*, cream of milk [lit. milk (*wihash*) upon (*-iang*) lying on top (*sapt*)]. This is probably an alteration of *hiák*, over.

Postpositions do not occur in *súk odé*, come into the house! *yépa dípé kusdtkide*, I stand on one leg, although they might be expected after *súk*, house, and *yépa*, leg.

POSTPOSITIONS

Postpositions occur in the following phrases and sentences: *sák mutú*, in the mountains; *nutí akú mutú*, east (lit. "sun-rising

at"); *indaydne munda na'tiré*, I look into the mirror; *muté aku muté aku-u sa-ure*, from the east; *widiu impiis sakó námure*, I broil meat on the coals; *yáp saguunyá sakó*, upon the table; *yíksé* or *íksa sakó*, back of hand (lit. "hand above"); *iswa sutkó*, down the river, down-stream; *iswá tak na'tiré*, I live on the river; *suk hapng*, on top of the house; *suk-yóp datuk*, inside of a brush-lodge.

THE ADJECTIVE

The adjective appears to have a double form throughout—the simple basis or stem, and this basis with a demonstrative or predicative suffix in *-re*, *-ré*, *-héré*, *-h'ré*, or some similar form. This may also be said of the numeral.

Although this suffix was originally verbifying and predicative, i. e., stood for the verb *be* in all its inflections, this is not strictly the case at present. But the adjective is always placed after its noun: *yáye tchin*, cold water; *yáye tchin'héré*, the water is cold; *hitchú parparearé*, a square box, or the box is square.

The plural number, if indicated at all, is pointed out by a word of plurality subjoined: *unturé*, many, or other; *agré*, sundry; *yaká*, several (as in *iska'téré yaká kuraré*, many white men; *yakaniré*, many, plenty of).

Gradation is expressed by *m'hére*, which is of an adverbial nature (as in *namú m'hére*, I am singing all the time) and has an augmentative meaning.

COLOR ADJECTIVES

In every language the adjectives of color form a study of absorbing interest, and those who believe that the more primitive a people the smaller their list of color names, will doubtless change their views on closer study. Indian color names occur in large numbers, but it requires persistent research to obtain them with accuracy, and in this work women are usually better informants than men.

For dark, somber, subdued, clear, and light as adjectival

modifiers of real color designations in Catawba, the following were found: *kare*, dark; *witchdwa kare*, a dark night; *wayant kdre*, dark green or yellow. *dyo*^a, clear, light; *ydb dyo*^a *mbdrire*, a clear day appears. *taktchire*, white, is used for light-colored, of a light shade. To express the abstract idea of color one might say *dgra waydntkare*, sundry yellows and greens. *wihéré*, *wihé*, *wire*, looking like, resembling.

The colors are: *taktchire*, white, light-colored; *taktchün wihéré*, gray; *taktchi tchihé*, *taktchiré mihé*, lavender or russet. *ska^aré*, *sikéka^ahré*, *sika^a*, red and all the red shades, as vermilion, crimson, scarlet, solferino, and purple; *sika^a wthere*, pale yellow or reddish, salmon-colored; *sika^a warett^a wire* (for *wthère*), pokeberry red; *sika^a hawaktchu wihé*, another red, darker; *sika^a hawutuihéré*, red-brown; *sika^a kd^ahéré*, "red dark," another red, still darker. *wdtka^a henusst wihé*, "egg-yellow" and light red; *wayant kdre*, yellow, darker than lemon; *wayastchire*, lemon-hued; *xayok^a honhire*, of gold color; *wuyantkakawiré*, buff; *wuyäkakure*, yellow body-paint. *sika^a hawut^ahawire*, brown; *hawut^ahuzwire*, brown, darker (see red-brown above). *wayant karé*, green; *wayaneriwiré* or *wyendrriré wire*, green, darker; *hawaktche wihiré*, green, dark. *wydnka(re)*, blue, the darker shades (*wüi*, *ü-i*, radix); *wayanrtwinhe*, *wayanertwinéré*, robin-egg blue, light blue; *hawut^a héré*, dark blue; *hoktchitcha^ahéré*, bluish black, also chocolate; *wóyantka(re) wóya dapa-siwi*, October blossom (lit. "dark-blue autumn flower"). *wi-ara*, blackberry; from its "blue" flower; *dapasiw^awuiré*, (its) flower is blue. *hawut^a karé*, black.

Yellow and green are expressed by the same term in this as in many other American languages.

NUMERALS

The decimal system of numeration forms the basis of the Catawba numerals. Two forms are observable in most numerals, a longer one, ending in *-re*, *-ré*, originally of a predicative function,

and a shorter one, used in counting, etc., without the above suffix.

The cardinal numbers are: *dérasi*, *dérassi*, one half (*deraká^hhé*, when speaking of coins, etc.): *dubé*, *népé*, *népá^s*, one (*nú^sti dépé*, one month); *nó^spréré*, two (short form, *ndpére*, *ndpère*, *nábéré*); *nomnéré*, three (short form, *nómna*, *nómna^s*); *porpréré*, four (short form, *párpére*, *pórpére*); *pákréré*, five (short form, *póktire*, *páktiri*); *dipkéré*, six (short form, *dipkara*, *dipkéré*); *wassignuréré*, seven (short form, *wassignuré*); *dowésaré*, eight (short form, *dáwussa*, *dáwésa*); *wantcharéré*, nine (short form, *wantchére*); *pitchinéré*, ten (short form, *pitchine*, *pitchun*).

The additive numerals which form the body of every decade from one to nine, as 11-19, 61-69, are composed by joining to the number of the decade the unit numbers followed by *haksare*, *hákssa*, "adding": *pitchin' dépé haksare*, or *hákssa*, eleven; *pitchun' (or pitchin') ndpère haksare*, twelve; *pitchin' nomnère haksare*, thirteen; *pitchune párpére haksare*, fourteen; *pitchun' páktiri haksare*, fifteen, etc.

The decades or teens are also formed in a very simple manner, the cardinal being placed after the *pitchine*, or ten, and serving as a multiplicative numeral: *pitchune (or pitchi) ndpère*, *nábéré*, twenty; *pitchin' nomnère*, *ndmène*, *ndmène*, thirty; *pitchun' párpère*, *párpére*, forty; *pitchin' póktire*, fifty, etc.; *pitchin' hdro (or hdre)*, one hundred (said to mean "big ten"); *pitchi hdre nó^spère*, two hundred; *pitchi hdre pitchiné*, one thousand.

The following examples will further illustrate the numerical system: *witsagú^si (or wítsa) dubé*, one horse. *ye-muand pitchin' ndpère dúpé háksá dárká^hhé*, I am twenty-one years and a half old. *yeyé pitchun' dáwús'sa páktire háksa*, eighty-five Indians. *aratgihé mú^sti derassthère*, the first quarter of the moon (lit. "first half of moon"). *maniané pitchune páktiri háksare*, fifteen square miles; *maniané pitchune páktiri háksa upádshire*, fifteen miles square. That numerals are always placed after the nouns which they qualify may be gathered from these and many other

examples. In Catawba there are no ordinal or adverbial numerals separate from the cardinals, but distributive numerals are expressed by inserting *okáhe*, each, after the cardinal or by some other word to the same effect: *nurí dépé tchepatchátschu nominíré*, I have been there three times in one month. *yabsigré napérré*, twice a week. *yé népúdhua^ai yénkure ye^adépánakure pahó^a páktire iguard*, each hunter killed five rabbits. *yá indpérré núbma wuyá wumú-ire páktire i-ánire*, each woman is getting five strings of beads [the word two (*indpérré*) is used here to express "each"; *wumú-ire* signifies "run-through," i. e., strings run through the beads]. *sák ndmidé sun-taro pitché hdré pitchiné mumbá okáhe*, three houses at one thousand dollars each [*sun-taro* = dollar (lit. "large metal"); *mumbá*, containing, "lying inside"].

There are employed a series of multiplicative numerals, of which the following specimens have been recorded: *haparpariré*, fourfold (as paper); *népa-isd hantphanire*, the paper is sixfold; *népa-isd hapitchiniré*, the paper is tenfold.

THE PRONOUN

Like the majority of American languages, Catawba is well supplied with pronouns, especially of the deictic and demonstrative classes, although certain adverbs are coördinate with them in their functions. These (adverbs) are mainly postpositive.

DEMONSTRATIVE PRONOUNS

Nearness to and distance from the speaker are the main points determining the use of demonstrative pronouns. Their plurals are expressed by words standing separately:

kí, this, presupposes nearness, closeness of contact: *yé kí*, this person here, or the Indian before you; *yáp kí* or *yóp kí*, this tree here; *impi hí*, fireplace, hearth (lit. "fire here").

há, this; *gús há*, this maize; *yáye yásku háyt*, this pail of water (lit. "water pail this").

ye, yé, yé^a, somebody, some person, he, she, the one, its real

meaning being person, individual, Indian (*niye*), man; *yepd*^a, somebody, a contraction of *yē dēpd*^a, "man-one."

ma, that, refers to objects distant, as *ma iswa*, that river; *iswa kūrē ma*, that distant river; *ma yōmpe*, that log.

ōwa, *ō-a*, *ūwa*, that one and those ones, is often used instead of only he, she, they, and refers to persons and other animate beings.

kūn, *kūnkē*, this one, and also he, she, it.

dēpd, *nēpd*, *nepā*^a, somebody, someone, and something—it is the numeral "one" used as a pronoun. The plural is *dapo-kre*, *dēpd-kre*, a contraction of *dēpd agrē*, sundry ones; *yepdn*, *yepd*^a, somebody, is *yē dēpd*^a (see supra).

Demonstrative adverbs and verbal phrases of demonstrative import are *hare* and *hire*: *yē hare*, this man here; *yē hire*, that man; *yā kure*, the woman (in the distance, i. e., absent); *yōp hat-hisare*, a tree near and visible; *yōp hā-intsare*, a tree within touching distance; *yōp ihisi*, that tree over yonder; *yōp at-hisare*, a tree distant several miles.

INDEFINITE PRONOUNS

Among the indefinite pronouns may be mentioned *dēpēra*, *nepēra*, other, another; *yem pa-thare*, nobody; *dēpdn pa-thare*, nothing; *tāne*, *tān*, so much, that much, and interrogatively, how much? how large? *untāre*, as many; *uksērd*, of the size of.

PERSONAL PRONOUNS

Some of the personal pronouns carry with themselves suffixed syllables, which evidently do not belong to the body of the word, and are somewhat comparable with *otros* in the Spanish *nosotros*, we; *vosotros*, ye. They are *-yi* or *-i*, *-ha*, *-wa*: I, *dī*, *dē*, *nī*; suffixed, *dīyi*, *dī-i*, *dē-i*, *dēyi*. Thou, *yī*, *yē*; suffixed, *yīye*. He, and she, *ōwa*, *ō-a*, *ū-a*. We, *hika*, *ha*, *hi*, *dōwa*; *hē ndpři*, we two. Ye, *wī*, *wīwa*; *wī ndpři*, ye two. They, *ōwa*, *ō-a*, *ū-a*, for both sexes.

An emphatic form may be given to the personal pronoun by

suffixing *mā*, *mā**, only, but; *dīmā*, myself; *yīmā*, thyself, yourself; *ōmā*, himself, herself; *dōwamā*, ourselves; *wiwamā*, yourselves; *omāmā*, themselves.

Inflected with an adjective, the personal pronoun presents the following paradigm: *namboritchārē*, I am sleepy (lit. "very sleepy"); *ye* or *yēt* *yamboritchurē*, you are sleepy; *ma* or *o-a* *himboritchurē*, he, she, is sleepy; *tō'si* *himboritchurē*, the dog is sleepy; *hi-nāp'ri* *hamboritchurē*, we two are sleepy; *wi-nāp'ri* *hamboritchurē*, ye two are sleepy; *dōwa* *hamboritchurē* or *hamborirē*, we are sleepy; *nirē*, *dirē* *hamboritchurē*, ye are sleepy; *ōwa* *wamboritchurē*, they are sleepy. The word sleepy is properly *himbōri* or *hambōri*, but through the addition of *-tchurē* it becomes "very sleepy."

POSSESSIVE PRONOUNS

One series of the possessive pronouns, apparently the most commonly used, is placed after the noun possessed, but another has its place before it, as *witi-i yē* and *ye witi*, your moccasins. The possessive her, hers, is expressed analytically by *yā*, woman, since the language does not denote sex by its inflections.

The paradigms of father and mother which were obtained are: *nanēndē*, *nanēna*, my father; *naneyē*, thy, your father; *nanēwa*, his father; *ya* (*kure*) *nanēwa*, her father; *nanehā*, *nanehē*, our father; *naneyē*, your (pl.) father; *nane-iyē*, their father. *shitchina* *tchitchinē*, my mother; *shitchiyē*, thy, your mother; *shitchiwa*, his, her mother; *shitchihē*, our mother; *kindpēre* *tchitchihēre*, the mother of us two; *shitchiyē*, your (pl.) mother; *shitchi-iyē*, their mother.

The other series of pronouns is prepositive: *tksa*, hand; *dikē*, my hand; *watōp*, knee; *yī* *watōp*, your knee. Here the pronoun occupies the same position that the nominal attribute occupies toward the noun it qualifies: *wamesā* *hiskā*, head of pipe; *wamēsū* *hitusā*, stem of pipe; *umpā* *pukarē*, tobacco smoke; *niyē* *umpārē*, Indian tobacco; *yāp* *tē*, root of tree; *kush* *idshā*, ear of maize; *impi* *dē*, blaze of the fire.

Another series, where ownership is emphasized, is as follows: *dé-i déhère*, or *dé kitcha*, my own; *yumá' uddrîre*, this is my hoe; *yé ylhère*, *yé kitcha*, thy own; *ô-a thère*, his, her own; *insdkwi t'hri*, the book is his; *insdkwi yá-k'ri t'hri*, *t'ri*, the book is hers; *kurtwa thère*, his own; *dôwa yihéhère*, our own; *dwa* or *ô-a yehîre*, their own.

In the third person there occurs a prefix, *hi-*, in animates and inanimates, for his, her, its, which is found also in the verbal inflection: *hi-tarîre*, he, she, is awake.

THE VERB

INFLECTIONAL FORMS OF THE VERB

Present information concerning the inflectional form of the verb in Catawba grammar is not sufficient to render an adequate idea of its whole inflection and its connection with the other parts of speech; but of these an idea at least can be conveyed through the following:

THE SUBSTANTIVE VERB "BE"

The substantive verb in the forms obtained appears to be a series of compounds of pronominal radices made to answer the needs of a verb or predicative expression.

Examples of the substantive verb "be" are: *dîrê*, I am; *dîrê mé hirê*, I am here; *yîyê*, you are; *ô-ayê*, he is; *yâ uê*, she is (lit. "the woman is"); *dô-u-ê*, *dowê*, we are; *wiwa-ê*, *wiwd*, ye are; *uwê*, they (men) are; *yâ kurê*, *uwê*, they (women) are. *butcharê*, I have been; *bûyare*, you have been; *u-ararê*, *wararê*, he has been; *yâ burarê*, she has been; *mu'hnaturê*, we have been; *muyayurê*, ye have been; *munârurê*, they have been. *dê'te unîrê*, I shall be; *yê'te unîrê*, you will be; *âtê unî-îrê*, he, she will be; (*dôwa*) *uhînd-ure*, we shall be; *yê'te uyenêrîrê*, ye will be; *âtê unarê*, they will be. *dîtê natârîre*, *dîti datarêrê*, I am awake; *yîdî yatârêre*, you are awake; *dê hitarîrê*, he is awake; *hitchû*

parparesaré, the box is square (or, a square box); *witcháwa karé*, a dark night; *witcháwa sèt karé*, the night is dark; *yáb sèt dyonré*, the day is clear; *yáb ayó^a mbádré*, a clear day appears.

TENSE

To eat: *dí dūdshó^aré*, I am eating; *sundā dūtcho^aré*, I ate yesterday; *yáwa dūdshó^aré*, I will eat tomorrow; *dí dūdshó^a tchúré*, I ate or eat much; *dí dí^a dshé^a atché^a kéré*, or *só^a hare*, I ate little.

To husk: *kúsh tishuré*, I am husking Indian corn; *kús há ishtuntaré*, this Indian corn has been husked; *yáwa^a kús há ishturé*, this Indian corn will be husked tomorrow.

To shoot: *búhi*, *púhi*, *mbúhi*, gun ("exploder"); *yí buhi-e'hndó*, you are shooting; *widabúhi mbúhi-endó*, you shoot a deer; *sundáwi widabúhi mboséré*, you shot a deer yesterday; *yawá^a widabúhi mbúséré*, you will shoot a deer tomorrow.

VOICE

The active, passive, reflective, reciprocal, and causative voices may be exemplified by the following instances which show that they perform a synthetic and not an analytic function:

To wash: *déta^aré* and *unúta^aré*, I wash (something); *dehá urta^aré* or *détida-uktanidé*, I was washed; *déyin dehakunúta^aré* or *dihakunata^aré*, I wash myself; *yeytha ukta^adé*! wash yourself! *étko unúta^aré*, to wash each other.

To fan: *kwakwá nahiré*, I fan (somebody); *kwakwatehuré déré*, I am or get fanned; *wotkatu*, with a feather fan; *dédiha kwakwasetéré*, I fan myself; *étko kwakwa-d-uré*, we fan one another; *kwakwa-ikuré*, fan (subst.).

To rub: *unatritéré*, I rub, I am rubbing; *yépa^a níwó-d-uré*, I get rubbed by somebody (*yépa^a*, for *ye dépa^a*, "man-one"); *deri-í^a unatritéré*, I rub myself; *yépa depá^a raha waswatchindé*, I cause somebody (*yé*) to rub another (*dépa^a*); *étko wétrihiére*, to rub each other.

To pinch: *íkša yé tchetchiré*, I pinch somebody in the arm;

dí tchiré, I am, get, pinched; *dehak tchitchiré*, I pinch myself; *etko intchiré*, to pinch one another.

To scratch: *yé kusé kí-kí-séré*, I scratch somebody standing (here); *hapké yére sure*, the cat is scratching you; *diri sure*, I get scratched; *díha ká-ká-shiré*, or *díha kí-kí-shiré*, I scratch myself; *etko-i sure*, to scratch each other.¹

To hit, strike: *yé népé kaseré*, I hit somebody (lit. "man another (I) hit"); *yá kanitchichuré*, I am hit or struck (lit. "some man hit me"); *de-i dehut kaseré*, I hit myself; *etko ka-iré*, to hit each other; *yébu ka-ishtchené*, or *himpó ka-ishtcheré*, I cause to hit somebody.

To shuck, husk: *gush tishuré*, I am husking maize; *gus há ish-tuntaré*, this maize has been husked.

To fall down: *yóp kí huktukéré*, this tree falls down; *déri yóp kí huktuknatchiré*, I cause the tree to fall down.

NUMBER

In many American languages the plural and dual numbers of the subject, and, in transitive verbs, of the object also, are often expressed in the verb by an additional affix. The different modes exist also in Catawba: *wátka diguaré*, I kill a chicken; *wátka padiguaré*, I kill chickens; *dé ka tchuré*, I take it; *yé ka tchuré*, you take it; *dé ka wintchuréré*, I take these things; *yé ka wiridé*, you take these things; *ó-a ka dapokré wiruréré*, he takes these things. *yén dípé haha-hdtkiré*, somebody is laughing; *yén depé-agré hahd-ikéré*, some are laughing; *yé népé akhatkíré*, somebody is weeping; *yé agré aká-ikíre*, some are weeping.

The noun does not appear to distinguish number, for no plural suffix is traceable; plurality is generally expressed by the addition of *agré*, *k'ére*, many, sundry.

VERBAL INFLECTION WITH PRONOMINAL SUBJECT

Examples in which the verb is inflected with the subject

¹ In the examples in this paragraph the Indian informant partially omitted to mention the principal verb of the sentence.

pronoun are: *kds niktâ're*, I am baking bread (lit. Indian corn); *kustâ itchud niktâ'tire*, you are baking cake; *â-a kustâ kata'tiré* he, she, is baking cake; *tchi wandshêré*, I am twisting; *yî wandshêré*, you are twisting; *yôp tchê kâ-isêre*, I am sawing wood; *tchu tchâ'ntsêré*, I am stretching out (something); *yî utchâ'ntsêré*, you are stretching out (cf. *sânsêré*, to tear); *iksa tchetchiré*, I pinch somebody, in the arm (*iksa*); *dêru wind'tare*, I suffer; *du* (for *dôwa*) *wind-are*, we suffer.

VERBAL INFLECTION WITH PRONOMINAL OBJECT

Examples of verbal inflection with pronominal objects follow:

I. Object personal and pronominal

tâ'si tchuknîre, the dog bites me (*nî*, *dî*, me); *tâ'si tchuk-yâ're*, the dog bites you, or thee; *tâ'si tchuk u-ôp'kîre*, the dog bites them (the children); *tâ'si yê tchuxdtire*, the dog (they say) bit the man. *yê kusî kî kî'sêré*, I scratch a man standing here; *hapkê yîre sure*, the cat scratches you. *dê kasêré*, I hit (strike) him (her); *hîska-i (dê) kasêré*, I hit him on the head; (*dê*) *kana-iré*, I hit you; *nîtém kana-iré*, I hit all of you; *yén* (for *yêwa*) *kurê kanayurê*, I hit them; *ka-iniré*, you hit (strike) him (her); *kâ-nu-idê*, you hit us; *yén kurê kâ-ne*, you hit them; *yê kurê kâ-ne hîre*, he, she, hits me; *yê kurê kâ-niré*, he, she hits you; *â-a kan-utkîré*, he, she hits us; *yê kurê kanuttkîré*, he, she hits you (all of you); *yê kurê kanwaktkîré*, he, she hits them.

II. Object expressed by a noun

dîska nigwandêré, I turn my head; *hîska, iska nigwandêré*, he turns his head; *dôwa, dâ-a hîsga digwandêré*, we turn our heads; *â-a iska digwandêré*, they turn their heads.

VERBALS

nindâsetire, I commence talking; *nindseti depê'rare*, I keep on talking; *nindse nktîshêre*, or *nindse kunsâsêre*, I cease talking. *yâye kuruksatê-îre*, I begin to drink water; *yâye kurûksa nktîshêre*, I stop drinking water. *tchîyu kî-indshêre*, I have finished

sawing. *mbô'sa wuyâ kâ'sère*, I broke a rope by shooting (*mbô'sa*) at it. *warîré*, dead; *yâ warîtt*, when you (*yâ*) are dead. *iswâ tîrîksare*, I ford the river; *iswâ tîrîksè yaktcharé*, I walk through the river by fording it. *arâ dshie nêpâ kaséré*, before hitting somebody; *dêpâ kanltare*, after hitting somebody; *kuna nîsè kaséré*, for the purpose of hitting. *kunthère haramotâ*, good to eat.

PARTICIPLES

yôp ha waruwakuré, mistletoe (lit. "bush not dying"); *yôp ka'-t-are*, chopped wood; *kasère*, I hit; *nepâ ka-lré*, one who is hitting; *depe kaharé*, one who has been hit; *isdkurî*, printed matter; *isa-hré*, "marked up" (in colors or otherwise; cf. *dêpâ isâ*, book, "that which has marks"); *nepâ-isa*, paper; *sôk haku-tchîrîre*, slope (lit. "mountain slanting downward"); *watdô yîre*, dry, or dried, pumpkin; *kâtchîre*, made of, manufactured; *wasaré*, frozen (cf. *wasasaharé*, hail falls); *hâksup sahéré*, the coat is torn (cf. *sânséré*, *sânsêrî*, to tear); *matchiyu ki-indshêré*, I have done with sawing; *wîkani tchîrîsère*, I became wet by sweating.

THE NOUN

NOMINA AGENTIS AND ACTORIS

The nomina agentis and actoris are usually formed by appending *-kîre* or *-kuré*, as in most of the following examples: *yê hinu-kîré*, a thief; *yâ nepumurikîré*, prostitute; *yê nêpâ dêpâmurikîré*, whoremonger; *yânderepâ*, sapsucker; *yêwî kuinakuré*, a warrior (*yêwî* = young man); *yîksîdsha umtyekuré*, index-finger; *yê hin-datakîre*, painter (*hinda*, line, track); *yê nêpakasa'tkîré*, writer; *yê yâ'pâ hâkî(re)*, miller; *yâ'pâ*, grist-mill; *yâ kutchin-hakpa'hé*, bird-trap; *yâ kutchin hakpa'hé tahatîkuré*, one (man) who makes bird-traps; *yê katchatkîré*, bird-trapper; *yê kâssêrag kudntîsère*, miller (lit. "man who grinds wheat").

NOMINA INSTRUMENTI

tushakêht, drum; *tusakâ'hkinséré*, I am drumming; *wa'sasû'sère*, flute; *dêra wa'sâsû sêîre*, I am fluting; *wuyâ-a kaikurî*,

sling; *wuya kat-isèttéré*, I sling stones; *dapa-tarèrohé*, spinning-wheel; *napa-tarèrò'sètteré*, I am spinning; *dépá-düropi-mókure*, buckle; *didi dépá-düropi-mósure*, I buckle up something; *kò'kò'kure*, a fan; *dediha kò'kò'sètteré*, I fan myself; *dèrù'bi nèpá tchákikuré*, flatiron; *dapa-i-ohèré*, a saw; *kun' mtchiyuré*, hand-saw; *dapa-i-ohèré yáp tcheka-isèré*, or *tchiyuré*, I saw wood with a saw; *yóp tchiyu-kuktuntchiré*, I saw this tree down; *dapa-i-ò tarokuré*, cross-cut-saw (lit. "large saw").

The chief formative suffix for forming names of tools, apparatus, etc., thus appears to be *-kure*. It occurs also in *siwékuré*, plume of plant; *wa'sa wokuré*, knot in reed.

MODES OF NEGATING

In Catawba, as in every other language, there are various ways of denying or negating in the compounding of words as well as in the spoken sentence. In the verb a negative voice exists, of which a complete paradigm could be set up.

Ha, *há*, or *a*, *d*, is the universal negative particle "not." It stands also as a separate word, as in *yóp ha waruwa*, a bush not dying (i. e., evergreen bush), but is more commonly incorporated into the adjective or verb. Examples are:

waharé, *wuhàré*, no (the opposite of *himbá*, yes); *uwòdsha wahare*, we make no use (of it); *tarò-a*, *taróha*, small, little (from *tarú*, large, and *a*, not); *yitchá ha taro*, little boy; *yén taróa*, youngster; *miruré*, strong; *miráhare*, weak (lit. "not strong"); *yíkse-e miráhare*, the weak arm; *yitúhare*, blind (from *ítu*, *yitú*, eye; *ha*, not). Other adjectives of a privative character are: *takshúhare*, deaf (from *tdkshu*, ear; "ears not having"); *hipunú-are*, lame (from *hímpu*, *hípu*, leg; "of legs deprived"); *du-i kunúhare*, *kunúhare*, of no account (lit. "thing no good for"); *kunihdhère haramotú*, not good to eat; *kunthère haramotú*, good to eat.

In verbs and sentences *ha*, *a*, appears as follows: *dúyi nè-màrèsaré* (for *s'hare*), I want nothing (lit. "a thing I want not"); *dápá harihiré*, nobody lives here (lit. "person not here");

nindasêhîrê, I speak; *ninddsare*, I do not speak; *yâ pathare*, no snakes (lit. "snake any not is"); *yêm pathare*, or *yim pathare*, nobody; *yuhukitchê pathare*, there are no negroes here; *dêd' barare* (for *barihare*), I do not know (cf. *barirê*, I know); *niyê pat-chatkê bahid-a â'hwârê*, we do not know any other Indians (the "not" is contained in *bahid-a*).

THE PARTICLE OF INTENSITY

Following are examples of *tchurê* (very), the particle of intensity: *tchîn' tchurê*, very cold; *nutt wike tchurê* (contracted to *wiktchurê*), the sun is hot; *nutt heptichu wdrepe tchurê*, the sun is hot; *impt sukso tchurê*, the fire is smoking; *yôp tcharâ tchurê*, or *yôp tcharâ tchû-ihîrê*, the wood is very hard (comparable with *dûrubl' tchararê*, iron is hard); *wanhd pitchurê*, a long arrow (cf. *wanhi tchêrîrî*, a short arrow); *yâye dêpangiarâ tchurê*, I am very thirsty; *yâye warepa tchurê*, very hot water; *hîê hâ tchurê*, the wind blows vehemently ("much"; *tchitchurê* being here abbreviated to *tchurê*); *yitchahê yaka tchatchi tchthurê*, a boy growing fast; *yê dup ma' tchurê*, a big cheat; *yê hitul'h tchêrê*, a sharp-sighted man, person; *hitarê*, bitter, sour; *hîta tchurê*, very bitter or sour; *yâ du-paksurê*, a liar (lit. "man not truthful," *-surê* probably standing for *tchurê*).

ORAL PARTICLES

When a verb or an entire sentence of frequent occurrence is replaced by a single word, the substituted term is usually a particle corresponding here and in other Indian languages to "they report," "as they say," "as you hear," "as is seen," etc.

The only oral particle, properly so called, that I could discover in Catawba is *utî*, which refers to sounds, voices, or reports heard. Examples are: *yê utî êhê-hatkîrê*, the man is coughing (lit. "the man hearingly cough-sounded"); *yê utî mbô-hatkîrê*, the man is shooting (lit. "the man, as heard, explode-sounded"), but when the shooting was too far to be heard, *yê mbô-hatîka*; *nddnîsarê*, the man was shooting, but I did not hear it; *yê utî*

nepapūpu hātkire, the man blows the bugle; *naniré* I hear him; *yé nepapūpu-hatika nantsari*, the man blowing the bugle I do not or did not hear.

The *-hère*, or *-hīre*, is used when the subject is near and visible; *kuré* when far off or invisible. This particle is probably connected with *kūrère*, to run.

DERIVATION OF WORDS

hamū hīé, breath (*hīé*, wind; *hīé sut sá-ure*, south wind).

hīsū, bottom; *hīsua*, *iswā*, river.

inddyane, glass, also mirror (a derivative of *intl*, stone, rock).

iskanśi, hair (from *iska*, head); *diska^{si}*, my hair.

itcha, *yitcha*, extremity; *nimpa yitcha*, my toe (lit. "my foot, its finger"); *iksa itcha*, finger (lit. "of the arm its end"); *diks-itcha*, my finger; *iks-idsha tūhukure*, smallest finger; *iks-idsha umtse kuré*, index-finger; *iks-idsha ndérasé*, middle finger.

kus, Indian corn, maize (really "stalk," and something that is standing). In Shawnee, *tami*, Indian corn, was originally the term for stalk. *kus-sérak*, wheat (lit. "maize-grass, corn weed or plant"); *kus-sérég hīū*, flour (lit. "wheat dust," "wheat seed"). Other derivatives of *kus* are *kus-suk*, corncob, *suk* meaning house, and here "location"; *kus-tān*, bread; *kus-tāk*, cornhusk. *Sérak-stwi* is cotton (lit. "weed-blossom," "grass-flower").

mōno, earth, ground; *mono hīū*, dust; *mon kl*, near the ground; *mānterdⁿ*, native, indigenous ("born in the land"—the Catawba name for the Cherokee); *manu-gisa*, or *-kisa*, standing on the ground, or soil—standing low; *monoyāne*, mile.

sapiku, what is on the top; *hīsua sapiku-tlrl*, the river is muddy (lit. "the river is topped, has something on the top"); *wihashiang sapi*, cream.

sapmāhire, lean, meager (lit. "many, or plenty, of bones"; *sap*, bone; *māhire*, many, more).

tri-i hit, *trl it*, cider, may be rendered verbatim as "fruit-juice."

uks-itshika, rainbow, formed in the same manner as the English word: *uks*, rain; *itshika*, bow. From *uks* is derived *huksoré*, it rains.

watka trú*, turkey (lit. "chicken large").

yáp-sagnuyd, table; i. e., "that which has wood (*yáp*) above (*sdko*)."

yé' mi 'hraré, *yé miraré*, chief, commander (lit. "man superior"); cf. *mā mtraha*, the majority, most people, and the adverb *miraré*, mainly, chiefly.

COMPOUND NOUNS

When two substantives form a composite noun, the qualifying stands before the qualified term, as in English. But when adjectives qualify a noun attributively, they are placed after the noun: *yí dshandust*, fishing-line (*yí*, fish); *yí wanté*, carp; *yí 'htché*, garfish; *yí tuse'*, *yí tú*, fish-tail, fish-fin; *wós wamp*, hornet (*wós*, bee, wasp); *wa'sd wokuré*, knot in reed; *yí wa'sd*, Adam's apple; *ye mukasankuré*, soul of man; *nípa itcha*, toes of my feet; *pis*, skin, shell, inclosure, as: *wide-pls*, deerskin (and skin of any animal); *ipa-isa bis*, paper; *word' pls*, walnut shell; *yé hagiú pls* skin of man; *ye hak pls ulmit-nimit'ha*, pimple. *it yd*, tear (for *iti ydyé*, "eye-water"); *ahd suri-l'*, wild goose; *kasd* suriyé'*, wild duck; *tó'si suri-d*, wolf (lit. "wild dog"); *yén t'érod*, child (lit. "person great-not"); *yáha wauríkure*, younger sister; *impi kt*, fireplace; *watept híú*, bottom of bottle; *watebt súsabi*, cork of bottle; *watebt ya'huri húr're*, bottle of whisky (*huri*, strong, is here duplicated); *yóp háskú*, knot in a board or stick; *buhí* (or *púhí) híú*, gunpowder (lit. "dust of gun"); *intí iswa musdwáré*, shoal in river; (lit. "rock river jutting-out"); *intí taróá*, gravel (lit. "stone large-not"); *diské* warpérl*, my own head is aching; *népt-túse-hápre*, panther (lit. "some-being-tail-long").

BINARY VERBAL COMPOUNDS

The binary verbal compound feature of the Catawba language forms a characteristic probably found in agglutinative

languages only, but not by any means in every one of them. A specialty like this is possible only through the incorporation of one verb into another by subordinating and reducing its body to its stem, or perhaps to its radical syllable. The shortened verb precedes the finite verb, and indicates the circumstance, reason, or cause of the action of the finite verb. These combinations have been found to occur more frequently in southern than in northern Indian languages, but no doubt they are found all over the continent. In many instances the radix appearing in the first part of the combination has become obsolete, and now occurs only as a part of a binary compound. In fact many or most of these binary compounds are pleonastic, since they would convey their meaning as well through the second component only; but they testify to the eminently graphic and concrete spirit which has prevailed in the formation of many American languages. Thus, in Peoria, one of the central Algonquian languages, we have *ná-wapámach*, he visited; from *ná'wa*, to see, and *wapámaka*, I observe (somebody). In the Atakapa, of southwestern Louisiana, I am folding (paper) is *wí kon-hipónisho* ("I take fold," "I take up to fold"); *yá tekó tik lumldmish!* roll thou this barrel! is literally "this barrel go roll," *kón-* and *tik-* being the radicals of the abbreviated verbs.

Other binary verbal compounds in Catawba are:

hi wi-mutú' widsha dūgiatd're, I visit (somebody) at his home, in his house; lit. "house in visit I want."

isua tirikshé yáktchare, I ford the river on foot; lit. "the river fording I cross."

tchuestépá tchirika-hukutchiré, the resin flows down (from the tree); lit. "resin running flows downward."

wit krú tchdrére, I go to battle or war; lit. "battle into running I go" (*krú* = *kúru*, to run).

yáp ki adadshá yán kasérédéré, I strike somebody with a stick. *yámpa yáp udshá kant're*, I get struck with a stick by somebody; lit. "man stick using struck me."

ydye.sá'ta hukutchiré, the water (in river) flows downward;
lit. "water flowing down is running."

yen-térda hui-para-ikiré, the children swing in a swing; lit.
"children roll and swing," or "children swing by rolling."

POINTS OF DIFFERENCE BETWEEN NORSE REMAINS AND INDIAN WORKS MOST CLOSELY RESEMBLING THEM

BY GERARD FOWKE

DISTINCTIVE WORKS OF EACH RACE

Few persons living among the evidences of Norse occupancy in the valley of Charles river, Massachusetts, have ever paid any particular attention to them, taking for granted that they are the work of the earlier generations of English inhabitants of the region. Those, however, who are sufficiently interested in a study of antiquity to give more than a passing thought to these objects of unknown origin, can see at once that many features connected with them not only would have been unsuitable for any of the necessities of the latter people, as they were then compelled to live, but could not have been turned to any practical use when completed. Such a conclusion is followed at once by the inference that they must pertain in some way to the social or political customs in vogue among the American Indians, it being quite natural thus to account for the existence within our territory of any form or result of human industry in which we, with our present methods and habits, can see neither utility nor purpose.

It does not require an extended acquaintance with aboriginal remains to convince an observer of the error of this inference: the two classes of works are so entirely different in many of their most distinctive characters that a person who has had an opportunity of becoming somewhat familiar with both will readily perceive that they must be due to people who could have had

but little in common in their habits of life—nothing more than would be expected of different races living under conditions somewhat the same.

Peculiar to the valley of the Charles are the hut-sites excavated in the hillsides, with their rows or piles of bowlders to afford a resting-place or foundation for the walls of the structures; the ditches that extend with practically a water-level along the slopes of the hills; the dams that obstruct the river and many of its tributaries on both sides; the artificial islands walled or protected with stones; the stone walls along the margin of the streams, between high and low tide,—none of these has a counterpart in any known works which can be attributed to Indian habits of life.

On the other hand, the extensive earthworks in the bottom-lands; the hilltop fortifications of earth and stone; the immense tumuli of earth or stone, or both combined; and the huge flat-topped mounds of the Mississippi valley exclude from any participation in the construction of the works first mentioned the Indian tribes popularly known as "mound-builders."

Prof. E. N. Horsford, who devoted his entire time for several years to a study of the Massachusetts remains, published a number of volumes and pamphlets containing very full descriptions, with numerous maps and many illustrations, of his discoveries. As these were printed only for private distribution, they are not readily accessible. A little volume by Elizabeth C. Shephard, bearing the title "A Guide-book to Norumbega and Vineland," describes most of the Norse remains near Cambridge, and gives several maps and figures; while Miss Cornelia Horsford, who has carried on the work in recent years, has published two reports. One of the latter is in the *National Geographic Magazine* for March, 1898, under the caption "Dwellings of the Saga-time in Iceland, Greenland, and Vineland"; the other, "Vineland and its Ruins," is to be found in the *Popular Science Monthly* for December, 1899. Both are well illustrated.

The reader who is interested in pursuing the subject further must refer to these publications, as it is not practicable herein to quote them at length.

HOUSES, HUTS, AND WIGWAMS

Of those apparent habitations of the Norse which bear some resemblance to what is of undoubted aboriginal construction, the dwellings of Leif and Thorfinn may first be considered. These are situated one on each side of a little stream which falls into the Charles at the Cambridge Hospital. They were rectangular in form and of a size sufficient to accommodate several families living in the old Scandinavian fashion. The walls were of stones and turf, principally the latter, and of a thickness altogether out of proportion to the size of the dwelling. Very little, if any, of that part which was above ground now remains, the earth being blown away and the stones scattered; but enough of the foundation may be seen to enable their outlines to be traced. It is probable that wood entered into their construction to some extent, but no trace of this would be left after so great a lapse of time.¹

The long-houses of the Iroquois and some of the larger houses built by the Chippewa had the same general form as these two dwellings; but with that the resemblance ceases. No foundation was necessary in the Indian house, and it was made principally or entirely of wood and bark; as a rule the framework was made of posts set upright in the ground to serve as supports on which were fastened the poles and twigs that formed the walls. Some of the earlier chronicles mention log-houses of the southern Indians, one of them, at least, containing five rooms; but the exact manner of construction of these is not known; at any rate, it is not probable that they had underground foundations, as no trace of such has been discovered during the numerous explorations of aboriginal village-sites in that region.

¹ See figures opposite pages 12 and 22 in the *Guide-Book*, op. cit.

Another form of Norse house in the vicinity of Cambridge, of which a number have been examined, is the *cot* or hillside hut. These are made by digging back into a sloping surface until a level floor of the desired area is formed. There are indications that such places were covered with timber on which earth was piled, the structure thus resembling a modern root-cellar or milk-

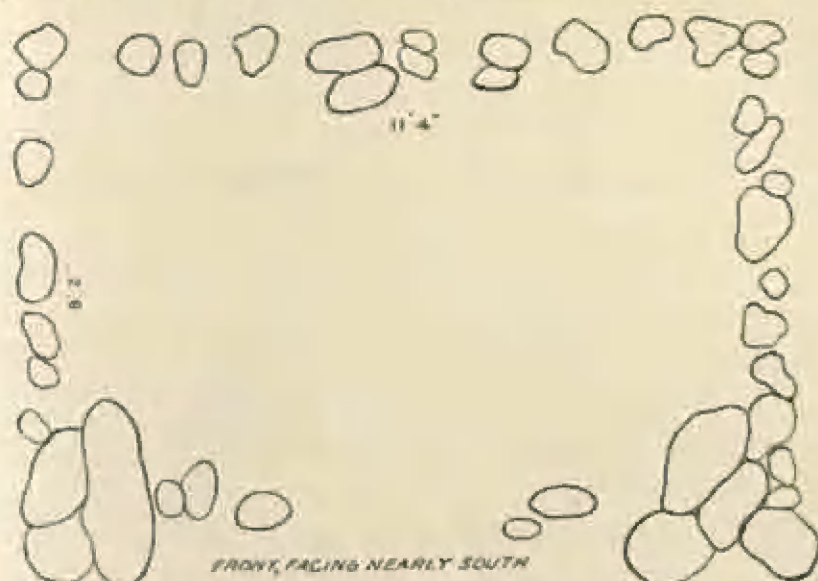


FIG. 55.—House-site above Sildrey's, on opposite side of swamp, near Massachusetts Central Railway.

house so often seen in such situations. Sometimes, but not always, stones were placed around the sides: in one instance there was a double row of stones in front, apparently the foundation of a heavy wooden wall, and in another case walls of stone and turf were built along the sides (see figure 62, the illustration on page 82 of the *National Geographic Magazine*, and the figures in *Popular Science Monthly*, op. cit.).

Nothing at all of Indian origin is known to be like these. With the exceptions noted above, Indian houses are not square or rectangular, but round: this applies equally to the small tipi or wigwam made of skins, cloth, or bark, and to the council-house of

timbers, which has a seating capacity of several hundred. Circles of earth, analogous to circus-rings, except that they vary in diameter from 20 to 150 feet, are quite common throughout the Mississippi valley. These were piled up around the base of the building to prevent the ingress of cold air near the ground. The same custom prevails in cold regions, and for the same reason, among our modern farmers, who bank up the earth around the foundations of a house or barn. Many of the ancient embankments have been trenched across, but in none of them has there been found the slightest evidence of underground work, unless the small, round holes in which posts were set may be so termed; and these, of course, are not in any way to be compared with the stone-filled trenches marking the sites of the houses of Leif and Thorfinn, nor the hillside excavations for the smaller *cots*.

The fireplace in both classes of houses is at the center; but this is the most desirable, in fact about the only convenient, position for it in a house built without chimneys. With its location the resemblance ceases; for the Norse fireplace is formed of a stratum of small stones carefully laid within a space marked off by larger stones, whereas the Indian starts his fire in a shallow depression which he scoops out, the stones about being usually those used in cooking.

FUNNEL-SHAPE EXCAVATIONS

Near East Watertown there is a peculiar work locally known as the "Amphitheater."¹ The depression which determines its site is a natural formation, known to geologists, from its shape, as a "kettle-hole"; that is, a hollow formed by the melting of a mass which became detached from the main body of the glacier when it covered this spot, and was imbedded in the gravel deposited by the ice-sheet. Around two-thirds of the circumference of this, artificial terraces have been constructed, apparently to

¹ See figure opposite page 34 of the *Guide-book*, op. cit.

furnish seats from which spectators might view the exercises or ceremonies which presumably took place on the inclosed level area at the bottom.

A somewhat similar structure is reported to exist in England, and so this amphitheater may be more recent than the days of the Norse; but whatever its origin it cannot be attributed to the Indian. Artificial excavations of a few cubic yards' capacity, used as storehouses, caches, etc., are not uncommon about Indian settlements; but only five are known which, for magnitude, will compare favorably with the East Watertown pit. All are in Ohio, three of them in fertile, level bottom-lands, the other two on the tops of low knolls that slope in every direction from the summit. All are in the immediate neighborhood of some of the more important works of the mound-builders. As to their purpose no one has ever been able to make even a plausible suggestion, and they remain among the enigmas of our archeology. In their construction the excavated earth was thrown out equally, or nearly so, on every side, thus giving a circular embankment of practically uniform section area, with a continuous slope from its top to the bottom of the hole. In one, on a clay knoll, the water stands much of the time; in a wet season, throughout the year. The others, being in sandy ground, are usually dry at the bottom. None of them has ever been cleaned out; but from the curvature of their sides down to the accumulated muck and debris it would seem that they were originally rounded and not flat on the bottom. However, the changes brought about by rains and frost may have caused very considerable alteration in their form since they were abandoned; and it is possible that they mark the site of underground chambers.

TERRACES

Somewhat more than a mile south of the amphitheater there occurs a work which seems to have been intended for the same purpose, and consequently must owe its construction to the same

people. At one side of a small area of smooth, level bottom-land, a sloping bank rises rather steeply to a height of perhaps 30 feet. Along this slope are three or four terraces, one above another, not large enough to be of any use for tillage. There is no knowledge or record concerning the time or the object of their construction.

There is nothing in the eastern part of the United States known to be of Indian origin with which these may properly be compared, although there are ancient terraces in the valley of the Little Miami, in Warren county, Ohio. Three of these form Fort Ancient. Unfortunately none of the maps of this interesting place show them at all correctly. One of the terraces is between the fort and the river; another is on the opposite side of the stream; while the third is beyond the ravine to the north. Each is about half-way between the base and the summit of the hill on which it is situated. They begin and terminate abruptly at a ravine or a sharp turn of the hill, holding as nearly the same level as it was possible to determine without instruments; each is several hundred yards in length and about twenty feet wide, their regularity being somewhat impaired by the erosion to which they have long been subjected. They were formed as terraces usually are—by cutting down the hillside above and piling the earth below until as much as was desired had been thus transferred. Their artificial character is shown by the charcoal, flint chips, and other products of human industry disclosed at various points by trenches cut through them; besides, no natural causes could have operated to produce them where they are situated.

Their purpose is unknown; they were not for farming, as there are wide, fertile bottoms close by; nor for defensive works, for there was nothing for two of them to protect, while the third is below one of the most inaccessible portions of the fort.

It is apparent there is no feature in common, beyond the fact of their having been made by men, between these and any of the terraces in the valley of Charles river.



A MOUND, SITUATED A MILE WEST OF CHILLICOTHE, OHIO, COMPOSED THROUGHOUT OF MINGLED STONE AND EARTH. HEIGHT, ELEVEN FEET.

BURIAL CUSTOMS

When people become subjected to the influence of an environment to which they have been unaccustomed, or when the conditions governing their life undergo a change, the immediate effect is an alteration of habits to conform to the new circumstances, and the divergence from earlier usages becomes more marked with the lapse of time. But the customs to which all peoples cling with the greatest tenacity are those pertaining to the final disposal of the dead. With long practice a sort of sanctity becomes attached to certain ceremonies and observances, and even among the most advanced nations may be witnessed rites which have now become absolutely meaningless, their origin being lost in the mists of antiquity. Reverence for the dead and care for the corpse or skeleton have been noted by all travelers among them as one of the most prominent of Indian characteristics, and persistence in certain methods of interment has been one of the chief aids to archeologists in determining areas of prehistoric tribal boundaries or migrations. This being true, more value attaches to a careful examination and comparison of burial works than to any other remains so far discovered.

MOUNDS

Although, as previously stated, the mound-builder is to be omitted from discussion, the reason for so doing will be more apparent if the character of his work be shown. In plate XXII is represented a mound, about 11 feet high, situated a mile west of Chillicothe, Ohio, on the highest plateau of the gravel, or glacial, deposits. The structure is composed partly of stones, some of which may be seen scattered on the surface. Mounds thus made are usually on hilltops, or at least on ground higher than the inclosures in the bottom-land, the mounds connected with the latter being composed entirely of earth. The evidence is plain that at least two tribes of mound-builders inhabited this

region, presumably at different times. The methods of burial and the unlikeness of the interior arrangement of the structures place this beyond question. So much space would be required for an explanation of the results of investigations in the tumuli, and they have been set forth in so many reports, that none will be attempted here.

The large mounds of Ohio, built entirely of stone, are confined to a limited area,—only three or four contiguous counties in the central part of the state,—and without exception are placed on hilltops overlooking the country for many miles in every direction. Though all of them have been more or less ransacked by relic-hunters, not one has ever been thoroughly explored, and beyond the fact that a few human bones, with associated artifacts, have been uncovered, nothing definite can be said about them. The mound shown in plate XXIII, *a*, situated near Linville, Licking county, has been thus somewhat reduced in height, the central portion down to the level of the ground having been thrown out. The rail leaning against the tree to the right is 8 feet long, showing the amount of stone to exceed greatly that in any of the Norse graves; and yet this mound is small as compared with some of the same class—notably the one near the Licking reservoir, which was more than 50 feet high and about 200 feet in diameter at the base.

CAIRNS, BARROWS, SMALL TUMULI

SHEENANDOAH, SOUTH BRANCH, AND UPPER POTOMAC VALLEYS

By far the greater number of American aborigines were interred in graves of which there is not now the slightest external indication. Relatively, very few of them were buried in mounds or cairns, yet it is only the latter that can here be used for comparison. In so simple a matter as piling up earth or stones merely for protective or monumental purposes, it is not to be expected that such well-marked plans are followed as will justify a



c—Stone mound near Linville, Licking county, Ohio. (Before being disturbed it was two to four feet higher. The wall against the tree to the right is eight feet long.)



d—The Baker mound, eight miles south of Martinsburg, West Virginia.

TYPES OF STONE MOUNDS

classification into types; the main distinction is to be found in the methods of interment.

While a few earth-mounds exist, there are no stone graves east of the northern part of the Blue Ridge. This range seems to have formed a distinct boundary between the tribes to the east and those to the west; differences in burial customs on the opposite sides are as great as between sections a thousand miles apart. To the east of this chain, and westward from the Alleghanies, nothing that is of Indian origin bears the most remote likeness to the graves at Waverly and Clematis Brook; while among the mountains the latter are most closely approached in appearance by heaps, each containing about a cartload of small stones, found where trails crossed the highest points in gaps leading from one valley to another. These, however, are simply trail-markers, and have no relation whatever to funeral ceremonies. A careful examination of many of them shows that they were placed on the natural surface; the earth beneath had never been disturbed. Stone graves are found frequently in the country about them, but always in a different situation.

It is very seldom that a cairn is to be found intact; their small size tempts the relic-hunter, or one who seeks the gratification of an idle curiosity, to tear them to pieces.

Along the upper Potomac and some of its tributaries, there is a class of burials in which the body was laid on the ground with a log, apparently about the size of the body, on each side; traces of decayed wood, terminating at each end in charcoal, lie near and parallel to the skeleton, showing that the timber had been burnt off to the desired length. It is probable that other logs were laid across these for the protection of the body. Stones were then heaped over the vault thus made. Frequently several separated interments were covered by one mound. At the settlement of this region by the whites, some forty or fifty of these mounds were scattered along the base of a mountain near Hanging Rock, four miles below Romney, West Virginia, some on the

hillside, others on the river bottom-land; but none was more than 50 feet from the bottom of the slope. In all except the smallest ones there was a depression in the top where the stones had fallen in from the decay of the wooden supports.

A different method was followed in the disposal of the corpse in cairns like that represented in plate XXIII, *b*. A shallow hole was dug, sometimes of a size to receive a single body extended at full length, sometimes round and of a diameter sufficient only to contain a corpse that had been folded or doubled into its smallest compass. More frequently the grave is large enough to hold several bodies that have been thus compressed.¹ Poles or small logs were laid across the hole to cover the body, and stones or earth, or sometimes both, heaped above. Mounds or cairns thus made seldom have any depression at the top, maintaining their flattened dome form. The one shown in plate XXIII, *b*, is located 8 miles south of Moorefield, West Virginia.

Throughout the valley of the Shenandoah and South branch, as well as on some of the smaller streams of this region, are cairns which were made of stone in the manner described and then covered with earth. They vary from 20 to 50 feet in diameter, and from two to five feet in height. Elliptical mounds and cairns also occur; but thorough examination of a number bearing this shape has shown that their form is due not to original construction in that manner, but to the coalescence or overlapping of two or more smaller structures placed near together, the irregular spaces between being filled with earth and stones to give them a more symmetrical outline.

The Delawares and the Catawba used this region as a hunting ground; the Six Nations claimed it as their exclusive property; the Shawnee lived here. All these had villages at different points. Tradition points to other tribes, but they have long since been removed or exterminated. Village-sites are many; but these

¹ From one, a little more than five feet across, portions of sixteen skeletons were obtained.

have communal earth-mounds and cemeteries. Most of the works here mentioned must be the remains of the tribes named above; but as all of them roamed over the country at will, living where they wished as long as they chose or until driven away by stronger tribes, traces of their occupancy must be treated as a whole; for our knowledge is and must remain too limited to permit discrimination.

MONONGAHELA AND UPPER OHIO VALLEYS

Watercourses being the earliest highways, it is natural to look for traces of prehistoric habitation along streams navigable for canoes almost every day in the year, flowing through fertile lands easily tilled, bordered by hills abounding in every sort of game. These conditions are met by the Monongahela and the upper Ohio; and nowhere is there greater evidence that our predecessors appreciated such advantages. Mounds, cairns, village-sites occur everywhere; the soil is strewn with implements necessary to primitive life. From the builder of the largest mound to the imbruted savage not much higher in the culture scale than the animals he hunted, all have left their mark in these beautiful valleys, on every acre of the soil. The burial places of the Mingo, the Delaware, and the Shawnee are plain, amid others whose authors will never be known.

These remains are found from the river shores to the tops of hills 600 feet high; most of them are on the first terrace just beyond flood-tide, or on the next level nearly 200 feet above. The relic-hunter has been among them, stimulated by the exorbitant prices paid by wealthy collectors; and for nearly a hundred miles only two cairns have escaped him. One of these, composed entirely of stone, which is on the bluff opposite Homestead, is shown in plate XXIV, *a*. It was formerly larger, but several wagon-loads of the stone have been taken for use in building. The method of burial varies in this region, owing to the different tribes that lived here. Investigation of these mounds might disclose bodies extended on the natural surface or placed in shallow

excavations. Either rocks or timber may have been placed over them, or the earth thrown directly on them. The bodies may be extended or folded; they may be accompanied by artifacts similar to the finest found in the Ohio mounds, or by a few rough arrowheads, or perhaps without any art remains whatever. All these and other forms of burial are common.

NORSE GRAVES

The barrows so far treated are such as would be best adapted for strengthening an argument that the graves on Charles river are of Indian origin; in other words, there are no cairns east of the Mississippi having a greater outward resemblance to those constructed by the Norse.

One of the latter is represented in plate XXIV, *b*. It is at Clematis Brook, a few miles from Cambridge. Graves of this type are numerous in that vicinity, as well as at other places within a few miles. They are called graves, because they answer in every particular of size and situation to those mentioned in different sagas, and are in the midst of various other remains which must be attributed to the Northmen; and yet, in all that have been examined there has been found not the slightest trace of bone or any object which shows the least indication of being artificial. This, however, is only negative evidence; the same statement is true in regard to the graves of Iceland and Greenland; and not only of the graves in these countries, but also of the house-sites. It is thus apparent that they differ from Indian graves even more in the manner of their interior construction than in their outward appearance.

The illustrations and descriptions given in this paper encompass every variety of Indian remains examined east of the Mississippi which is at all comparable with the Norse remains. Almost infinite diversity may exist in minor details; but the radical elements, within whose scope must come all observed facts, are here presented.



a — Mound opposite Hammond, Pennsylvania. (The rule is two feet long.)



b — Supposed Norse grave at Clematis Brook, Charles river, Massachusetts.

STONE MOUND AND SUPPOSED NORSE GRAVE

ARCHEOLOGICAL INVESTIGATIONS ON THE NORTH PACIFIC COAST IN 1899¹

By HARLAN I. SMITH

The archeological investigations conducted under my direction on the North Pacific coast, during the year 1899, for the Jesup North Pacific Expedition, were a continuation of researches pursued in the same field during the two preceding seasons and were directed toward problems suggested largely by the results of the previous work. In the state of Washington it was considered desirable (1) to extend existing knowledge of the distribution and character of cairns and burial mounds; (2) to make a reconnaissance of the shell-heaps of Puget sound and the western coast with special reference to a determination (*a*) of their character and distribution, (*b*) of the southern limits of the North Pacific coast culture in America, (*c*) of any possible influence from the region of the lower Columbia, and (*d*) to learn if the shell-heaps of the lower Fraser have analogy with those of this area.

In British Columbia further investigation of the cairns and shell-heaps of southeastern Vancouver island was desirable. It was necessary also to study the archeology of Lillooet valley with reference to possible communication of coast culture with the interior, and vice versa. Graves under rock-slides were reported by Indians to occur in Nicola valley, and since thus differing in character from those found at Kamloops, Spences Bridge, and Lytton, they also were to be closely examined.

Our knowledge of the distribution of cairns was extended to Whidbey island, where there were found many of the type com-

¹ Presented before the Section of Anthropology of the American Association for the Advancement of Science, New York, 1900, and now published by authority of the trustees of the American Museum of Natural History.

mon to the vicinity of Victoria, and containing skeletons in a fair state of preservation. No burial mounds were seen during the year.

On the western coast of Washington shell-heaps were found around Shoalwater bay, Gray's harbor, and at Copalis head; and on Puget sound and the straits of Juan de Fuca they are very numerous. As usual, these vary in size, but in no way do they differ widely in character from those of the eastern coast of Vancouver island.

Throughout the region south of Seattle there were found small chipped arrowpoints of agate and other stone especially suited to implements of this sort, and being decidedly of the type of those found in Columbia valley near The Dalles. Such stone arrowpoints are less frequently found in the immediate region of Puget sound, and they are still more scarce in the area farther north.

In addition to the indication of cultural influence from Columbia valley in the region south of Seattle, as displayed by the arrowpoints mentioned, there were found several other objects which strengthen the hypothesis that such influence existed. On the coast, from Gray's harbor southward, grooved hammers with a pit on one side, in the center of the groove, were discovered. From Copalis head southward there were found stone hammers resembling, in general form, a pestle of square cross-section, with rounded corners, with hat-shape top (which in some specimens was specialized to represent an animal head), and with no battered or abraded end, but having pits on either side, indicating use on the sides as a hammer rather than on the end as a pestle. Another hammer bears the shape of the frustum of a cone with a smaller frustum for a handle, the two frusta being base to base and having the corners rounded. On Gray's harbor a pile-driver is found, but with one handle instead of the usual two-hand lugs.

On the western coast sinkers were collected, some with a single groove, others with a second groove at a right angle to the

first and in some cases extending only half-way round; i. e., from the first groove over the end and meeting it on the opposite side. On this coast, as also on Puget sound, occurs the stone club with perforated handle-knob and of lozenge shape in cross-section with rounded corners. In the latter area is found another type of stone club—that of the well-known paddle or *patté* shape. On upper Puget sound is discovered a stone club with two ax-like blades. Stone clubs of similar form, but having the end near the blades specialized to represent the head of an animal, are found in Columbia valley and even as far to the south as northern California. The common fish-rake points made of bone, harpoon-points and barbs, barbed harpoon-points, stone celts, wedges made of antler, and whetstones are also found throughout the entire region. The stone pestles of Puget sound, like the typical form of that implement found at Lytton, have hat-shape tops and striking-heads, or, like those of northern Vancouver island, have a striking-head at each end (the faces of which are nearly parallel), one being smaller than the other.

The southern limit of North Pacific coast culture and the northern limit of important influence from the Columbia seem to coalesce in the region from Shoalwater bay to Seattle.

In the delta region of Stikine and Skagit rivers the material of which the shell-heaps are composed resembles that of like remains on the lower Fraser, and skeletons are almost as frequently obtained in the layers. The objects procured therefrom are not so numerous nor of such a high degree of art as those found in the shell-heaps near the Fraser, but are similar to, although more abundant than, the artifacts from the coast heaps. On the whole, the difference in character between the delta shell-heaps and those of the coast seems to be due to the blackness of the surrounding soil, the action of the water in the lowlands, and the dissimilarity between the mode of life of a river and a beach people. The more frequent occurrence of skeletons is not explained. The difference between the various delta shell-heaps

seems to be due to the fact that in the region of the lower Fraser the culture of its inhabitants was more highly developed, probably on account of a more favorable environment.

Active work in the cairns of southeastern Vancouver island resulted in the collection of a large quantity of additional osteological material which will doubtless prove useful in determining the physical characteristics and relationships of the cairn builders.

A fragment of a tubular pipe of steatite and a short tubular pipe of the same material from the shell-heaps near North Saanich suggest influence on the art products of this section from the interior by way of Fraser river. This indication is strengthened by the fact that in the lower layers of the shell-heaps are found skulls which closely resemble the narrower of the two types of crania from a shell-heap in Fraser delta.

In Lillooet valley the chipped projectile-points are generally of glassy basalt, as is the case in the interior, rather than in the delta of the Fraser or on the coast. A few stone hammers or pestles from the valley named resemble those of Lytton, but the typical form, which has previously been described, is like that of northern Vancouver island. The rarity of this type in Fraser delta suggests that the art products of Lillooet valley were influenced from Vancouver island by a more northerly route. But an adz of iron was found hafted in a piece of antler exactly as are the stone celts from Fraser delta. Carved stone dishes, such as were sacrificially used in recent times by the Indians, at the time of taking the first salmon each year, are also found in Lillooet valley. Their carving, which slightly resembles that of the dishes of the vicinity of Yale, Sumas prairie, and southeastern Vancouver island, is of special interest as its real affiliations are yet to be found.

Nicola river descends rapidly from the top of the plateau to the Thompson, where it has eroded a deep valley. At the bases of the rock-slides in several places in this valley graves were discovered which had been made on the ground and the talus slope

then sufficiently disturbed to cause the rocks to slide down and cover the body. One of these graves was covered with a tent formed of mats supported on poles, confirming the belief that the poles and wooden slabs found over graves at Spences Bridge and Kamloops were the remains of similar tents. The contents of the Nicola valley graves were of practically the same character as those of the other graves examined in the southern interior of British Columbia. Some beautiful double-blade celts of nephrite (two of them being each over thirteen inches in length) were also found here. Certain other specimens from graves, such as copper pendants for the middle of a necklace, were similar to objects obtained at Lytton, where their use was not fully understood; here, however, they were found in such a good state of preservation and under such circumstances that their use is obvious.

It is desirable to continue the archeological investigations in Lillooet valley, especially in its northwestern part, for the purpose of comparing the culture of its former inhabitants with that of the northern portion of Vancouver island. On the south the valley of the Fraser between Lytton and Port Hammond should be examined, with particular regard to sculpture for comparison with the type found in Lillooet valley. The Columbia river region in the interior of Washington and Oregon probably contains the key to several problems, especially with reference to those of the interior of British Columbia. The culture of the western coast of Vancouver island, while probably similar to that of the surrounding region already examined, should also be studied for the purpose of completing the reconnoissance of the immediate region. To extend such a reconnoissance it will be necessary to study the archeology of the Lower Columbia on the south, and of Queen Charlotte islands and southern Alaska on the north.

THE SEDNA CYCLE: A STUDY IN MYTH EVOLUTION

By H. NEWELL WARDLE

Along the shores of the Arctic ocean, from the most easterly point of the North American continent to beyond the confines of Bering sea on the west,—a vast range embracing nearly half the globe,—there has stretched, in historic times, a people whose unity is attested by language, mythology, and culture. The problem of its birthplace and its wanderings is still one of the moot points of anthropology. Basing his study on the linguistic affinity of Eskimo culture-names, Dr Rink laid the foundation of the future solution of this problem; he, who knew their folklore best, repeatedly denied its historical basis¹; only as indirect testimony is it of value.

A broad survey of the field presents in the Central regions a luxuriance of forms and details, diminishing to the east, and passing off to the west into hybrid myths, and customs probably borrowed.

The folktales of a people, like all organic structures subject to rise, progress, and decay, become in time, even when there is no question of crossing with extra-tribal myths, a truly mongrel breed. Any material change in culture or environment begets new types or adds minor features to the old. While it is fairly safe to regard the common meeting-ground of the majority of forms as most approximate to the culture-home, meagerness of detail, on the other hand, is not an infallible measure of distance. Religiosity is markedly influenced by externals. If the struggle for existence absorbs more than a due proportion of time and energy, it does so at the expense of the cult. The admirable completeness of the Baffinland collection is not alone due to Dr

¹ *Tales and Traditions*, p. 87 et seq. *Eskimo Tribes*, vol. 1, p. 17.

Boas' patient research: Mr Kroeber's utmost effort obtained only the merest fragments from the Inuit of Smith sound,—this despite the fiction-fostering effect of the long night.

The Sedna myth, apparently absent in Asia, Alaska, and the Mackenzie region, altered in the Ungava district, growing more and more fragmentary as it passes from Smith sound through western and southern Greenland to Angmagsalik, is vital only in the Central regions. Here is presumably its birthplace. Schelling long ago formulated the doctrine that mythology, like language, is a formative element of a people.¹ If this be true, the Eskimo culture-home must be looked for on the coast of Hudson bay, an area most approximate to that locality where primitive and highly developed types are found associated, the specialization having taken place at a time subsequent to the parting of the two great branches, the northward and the westward. Its unimportance or nonexistence in Alaska negatives the theory of a western ethnic area of characterization.

The story of Sedna, or Sana, seems at first sight to center in the creation of sea mammals, but it can be demonstrated to possess another *raison d'être*. A critical examination of the names of its principal actor, the ancient chief deity of the northward branch of the Inuit, sheds much light on its meaning.

Sidne, Sedna, or Sana is clearly formed from the root *sa* ("its front side")² and the demonstrative affix *na* ("one who"), hence, "that one who is before."³

Aivilliajoq (Aywilliayoo, Lyon) seems to be built up from the

¹ Quoted by Prof. Max Müller in his *Science of Religion*, 1872, p. 57.

² From the root *sa* come *sarqag*, "sunside" (*qauk*, "light"); *satsigpeq*, "is far seaward"; *sana*, "before him"; *silarvêk*, "suffers from heat"; *sama*, "what is lower or seaward", etc. There seems to be a tendency in central and western Greenland for this root's derivatives to change to *sed* + and *sand* +.

³ While the demonstrative roots used in Greenland indicate that the natives faced the west or open sea to fix the compass points, the terms of direction used in Baffinland are governed entirely by weather. In Greenland, where the open sea lay to the south, the terms, so far as given, show that the natives faced the sea. This results from having a precipitous wall behind. North of the arctic circle they no longer fixed the world-quarters by the rising and the setting of the sun.

root *aiw* ("fetching, giving"), the stem *ilivog* ("proceeding with regard to time, doing"), and the affix *iaq* ("plenty, a multitude"); or the terminal *joq* may represent Greenland *soq*, the nominal participial ending "one who." Accordingly the range of meanings is: "The periodic giving or bringing of plenty"; "the bringing or giving of plenty of useful things"; "she who brings or gives useful things"; "she who periodically brings or gives."

For the name Nulijok (Nooleayoo, Lyon) there are two possible derivations: first, from *nulijaq* ("wife, a married woman") and *iaq* ("plenty"), hence, "the woman of plenty"; second, from *nuiwog* ("makes its appearance"), *ili* ("periodicity or worth"), and *iaq* ("plenty"), thus, "the appearance of a multitude of useful things," or "the periodic arrival of plenty."¹

Finally, she is known as Unigumissuitung, "she who never wished to marry."²

The character who plays the second rôle in the arctic sacred drama is known usually as Anguta ("her father"), Savirqongs ("he with a knife"), or Anautalik (Annawtalig, Lyon; "the man with something to cut").³ But he has another name—

¹ From the root *aiw* or *aw* come *aiwa*, "fetches it"; *apa*, "brings it"; *aiwak*, *apa*, *aiwapa*, "shares with him"; *awaga*, "is charitable, benevolent toward him", etc.; probably also *awjarak*, "a pot"; *awal*, "circumference"; *awalerk*, "universe"; *awadliq*, "farthest outward, the horizon."

² The second stem seems to be derived from the root *ilil*, which, through all its derivatives, implies the sense of "worth", "usefulness", both practical and spiritual, as relating to the practices of the *angukut* and to learning in general.

³ From the stem *nuiwog* come also *nuiwa*, "the sunrise"; *nukaja*, *nuiwa*, "cloud." The second derivation is to be preferred, though the word, belonging to religion, was probably intended to carry the double meaning—a play upon words. It is interesting to note that the word *nulijaq*, "wife, married woman", is itself probably descended from *nui*, "appearance", and *ilil*, "periodicity or worth."

⁴ The nominal participial ending *soq* or *joq*, replacing *iaq*, would make this "she who periodically arrives." The uncertain phonetics of the early transcribers make it questionable but do not alter the necessary deductions.

⁵ From *nuitkpek*, "she marries"; (*glumovog*, "wishes or intends to"; *nuitkpek*, "never"; noun ending = *ng=k* of the Greenland dialect.

⁶ Also spelled Savikuong; from *savik*, "knife"; (*iljoq*, "one who."

⁷ Dr Franz Boas, "The Central Eskimo," in *Sixth Annual Report Bureau of Ethnology*, p. 566.

Napajok (Nappayok, Lyon), from *napiva* ("breaks it across") and *soq* or *joq* ("one who"), therefore "he who is broken across." All of the old man's names refer to the contents of the myth.

This tells how³ —

Savirqong lived alone with his daughter, Sedna, who grew to be a handsome girl, but yet refused to marry.

Finally, with the breaking up of the ice in the spring, a fulmar flew over the water.

He wooed her with fine tales of his home.

She is won and they journeyed together over the vast sea.

Her new home was not of beautiful pelts, but was covered with wretched fishskins, full of holes that gave free entrance to the wind. Instead of soft reindeer-skins her bed was of hard walrus-hides, and she had to live solely on fish which the birds brought.

She wept and pined for home. When the sea was again stirred by warmer winds, the father left his country to visit Sedna. She greeted him joyfully.

Savirqong, in revenge for his daughter's wrongs, killed the fulmar, and, taking Sedna in his boat, commenced the homeward journey.

The father is here a personification of winter; the damsel, the beautiful summertime. The summer is a rover and refuses to dwell in the land of the Inuit.

The fulmar typifies the wind; the *Fulmarus glacialis* is peculiarly a bird on the wing.

The wooing breeze.

The southward flitting of the summertime.

Her new home in the ocean, whence come and whither go the sun and the warmth of summer; her tattered tent of fishskins, through which sweep the ocean winds, her walrus bed, her aqueous food, indicate the entire absence of land other than the ocean floor.

The winter and summer meet.

The radiant greeting of spring.

The northward progress of the sun — the return of summer.

³ It is significant that the derivatives of this stem include the names for the joints of the body: *naynuq*, "a joint"; *nabluot*, *nablon*, "knee"; *nabworik*, "num-ber", etc.

⁴ Condensed from Dr Boas' account, op. cit., p. 583. I wish here to acknowledge my great indebtedness to this suggestive work for the versions used as the working basis of this paper.

The fulmars coming home, found their companion dead, his wife gone, and set out in pursuit. Sad over the loss of their murdered comrade, they continue to mourn and cry to this day.

Coming in sight of the boat, they stirred up a heavy storm; the sea rose in immense waves and threatened the pair with destruction.

In mortal terror the father flung Sedna overboard as an offering to the birds.

She grasped the edge of the boat with a death-grip. Savirqong then took a knife and cut off the joints of her fingers, she clinging more desperately till only the stumps were left. Whales, seals, and groundseals were successively formed from the phalanges. Then the hurricane having subsided because the fulmars deemed her dead, he allowed her to climb into the boat.

Cherishing a desire for revenge, she waited till they were once more ashore, when, calling her dogs, she allowed them to gnaw off her father's hands and feet as he slept.

Aroused, he cursed¹ them all, whereupon the earth opened and swallowed the hut, the father, the daughter, and the dogs. They have since lived in Adlivun, of which Sedna is the mistress.

A notable feature of the Sedna myth is its biennial cycle, in itself a mark of the age of the cult and the youth of the version.

¹As the Inuit tongue, it is said, contains no oaths, "cursed" must here be interpreted as simply "wished them ill."

A bit of pure natural history has been introduced here and the characteristic note of the bird associated with the wail of the winds.

The autumnal storms. No more typical arctic bird could have been selected to symbolize the bringer of the storm than this cousin of our own stormy petrel.

The sun dips below the horizon: the summer is going.

Whether the order of creation may be traced to the first annual appearance of these animals at the early home of the Inuit, is problematic. More likely it is determined by native fancy and reason. The species and their succession are not constant.

The old man sleeps—the winter sleep of the land: her dogs, the sun's rays, gnaw off the edges of the glacial ice and the icebergs break away, in spring.

This is the Eskimo apotheosis.

As full corroboration of this, Dr Boas has preserved the story as given in an ancient song. It begins with the departure of Sedna in the fall and ends with her death in the following autumn—the true annual cycle of the seasonal myth devoid of later accretions. It varies in a few particulars from its modern descendant. A brother is introduced, but apparently plays no part. Having cut off her fingers, the father pierces her eye—the sun, the eye of summer, the light of her face. He takes her dead body ashore and covers it with a dogskin, thus burying the last vestige of summer beneath a mantle of snow. When the flood comes in it covers Sedna, and the cosmic ocean has taken the summer to itself.

She is described by the *angakut* as very large,—an attempt to represent greatness by size. She is scarcely able to move,—a transference of the winter condition in her absence to her in her home in the ocean which is frozen over.

Savirgong is also a cripple, and appears to the dying, whom he grasps with his right hand, which has only three fingers—the chill hand of death; the right hand, a sign of power; three-fingered from the three main winds which the winter rules, east, north, and west.

The association of this arctic goddess with the ocean realm has originated many rigid religious observances, a discussion of which lies beyond the scope of this paper.¹

Lyon's portrayal² of Nuliajok, or Sedna, in her home shows a transition to the Greenlandic story of Arnaquagsaq. She is the

¹ The taboo relative to the working of deer- and seal-skins, extending as it does even to Alaska, seems to point to a former wider range of the Sedna myth. The legend of the origin of walrus and reindeer tells how Sedna, having created the deer, "became frightened and ordered it to run away, but the deer turned upon her and would not go; she became angry and knocked out its teeth. It turned round at once, but before it could leave she gave it a kick which lopped off its tail." (Boas, *op. cit.*, pp. 587-588.) This is native natural history, not mythology. It is combined with an attempt to account for her dislike of deer. Since she has no deer in her ocean home, it follows that she must dislike them.

² *Private Journal of Capt. G. F. Lyon*, London, 1824, p. 362.

mother and protectress, or rather the ruler, of sea animals, which she occasionally withholds, i. e., in times of dearth, late seasons. These she grasps in her right hand, the dexterous hand; and to secure them, the *angakoq*, who has visited her for that purpose, strives to cut it off. According to the joints severed is determined the kind of game obtained. This is extremely characteristic of primitive logic; that the gods may give it is necessary, by symbol and drama, to remind them of the thing desired and the manner of its first bestowal.

On Smith sound they tell how a woman began to devour her sleeping parents, who fled from the *igdlu*. Her father, returning for a knife, carried her to the boat, and from her fingers that he chopped off over the gunwale sprung the sea mammals.¹ They also tell of "Nerivik ('place of food'), who lives beneath the sea. When the seals fail to appear an *angakoq* visits Nerivik and combs her tangled hair, whereupon, she releases the seals and they come up."² But here, among the most northerly tribe on the globe, the winter has almost vanquished the summer, and the father, in his character of Torngaxssung (the Great Shade), has assumed a prominence unknown in the Central regions. So important did he become in the extreme north that, after the invasion of the milder district of western and southern Greenland, he is still the supreme god, relegating his daughter to a minor place. This, as Arnaquagsaq³ ("the very old or great woman"⁴), she amply fills.

Briefly, the story⁵ refers to a woman who represents the source

¹ A. L. Kroeber in *Four. Am. Folk-lore*, vol. XII, p. 179; also *Bulletin Am. Mus. Nat. Hist.*, vol. XII, p. 317.

² *Ibid.*

³ In Raffenland, Nanaquagsaq (Spicer), a dialectal variation. Boas, p. 587.

⁴ From *arnaq*, "woman, mother"; *arnaq*, "great or very"; *aq*, "grand, magnificent." Or from *arnaq*, "woman"; *arnaq*, "great"; *aq*, "the front side"; hence, "the great woman in front." The other derivation gives an emphatic form. The word is in everyday use with this meaning. The words for "old" and "great" are identical.

⁵ David Crantz, *History of Greenland*, London, 1767, vol. I, p. 206; also Boas, op. cit., pp. 586-587.

of nourishment and whose abode is the ocean depths. "She sits in her dwelling [the visible world domed by the sky], in front of a lamp [the sun], beneath which is placed a vessel [the ocean] which receives the oil [the rain, etc.] that keeps flowing down from the lamp [a typical Eskimo figure]. From this vessel [the ocean], as well as from the dark interior of her hut [the world beyond whence come the birds, etc.], she sends out all the food-animals. These she sometimes withholds, because certain noxious parasites have fastened themselves upon her head [the symbol of the storm-clouds of a late season]. She is relieved by an *angakok* who visits her"—the function of all primitive priests, to change the weather by prayer, i. e., by passing out of themselves and journeying to meet the gods. His way thither lies along that famous mystic road, traversed only by the seer and the dead, which leads down the slope of the sky and over the edge of the world.¹

As Ildiragijenget ("she who sleeps in the house of the wind") she is ruler of the underworld, Adlivun.² She and her father occupy opposite sides of a large house. Since their apotheosis they must live in the same place but keep apart that summer and winter may not get mixed. Savirqong, scarcely able to move, lies on the ledge and is covered with old skins—the frozen condition of the wintry, snow-covered world. Like his daughter he has but one eye,—the moon. The dead, seized by Anguta, are carried thither and must remain a year, lying by the side of the old man,

¹ Brinton, "The Journey of the Soul," in his *Essays of an Americanist*.

² From *iglle*, "house"; / (Central) = *is* (Greenland); *isigpek*, "he sleeps"; *ag*, "wind" (*agagag*, "the wind-side"; *ag*, "the front-side." Around the root *ag* are grouped stems embracing the idea of "keen", "sharp", "the touch"). The word is very irregular, seemingly, but I trust I have not erred.

³ "The place below", from *at*, "below", and the locative *vua*, *vik*. Though the term may have this meaning now, I believe its true derivation is from *aglluk*, "striped, streaked"; hence, "the place which is striped or streaked," i. e., the west. The other future world is now *Qudlivun*, "the place above," from *qut*, *qut*, "the upper part, above." It is safe to derive it from *qaut*, "light"; *ik*, "having"; *vik*, *vua*, "the place which";—"the place having light" (originally the east). The Inuit terms of direction are extremely loose, and the pressing of the western horizon to a point beneath resulted in the elevation of *Qudlivun*. The relation of these names to *Adlet* and *Qudlivunait*, respectively, is patent.

who pinches them; i. e., about as long as the body would hold together exposed to the elements—the pinching cold of winter. Across the threshold lies Sedna's dog,—the rough western, later the southern, horizon.¹ The well-nigh universal association of the dog with death is largely in evidence in the Sana cult,² and links it to the diurnal and seasonal myths all the world over.

Not without significance is the occurrence in Baffinland of a yet older and strangely allied myth, side by side with the Sedna tales. The most constant of the stories gleaned by travelers and students has been that of the "Woman Who Married a Dog." Because of its distribution it must be considered as very old, if not, in fact, the most ancient of them all. Yet the fact that from the first the European has been greeted everywhere by the Inuit by the name of one of its actors, "Qudlunait," has occasioned considerable surprise.³ Strangely enough, it was not until the appearance of Fru Rink's article⁴ that any serious attempt was made to interpret it, and I might have been content to accept this had not my own linguistic essays forced me to a different rendering.

An analysis of the woman's names in this connection throws no light on the tale, since it refers us back to the tale for their meaning,—Niviarsiang, "the girl"; Uinigumissuitung, "she who never wished to marry."

The same is true of the father's names: Anguta, "her father"; Savirgong, "he with a knife."

That of the dog husband is more instructive. Ijirqang, from

¹ Compare with Lyon's account of the stages of the underworld where the idea of the low and narrow grave seems transferred to the after-world (p. 273). The ancient belief seems to be that the soul lingers for some time near the body before its descent to "Adlivun." The features seems to be a blending of the two.

² Compare with Lyon's description and with the dog husband of Uinigumissuitung.

³ In western and southern Greenland the head of a dog was always placed by a child's grave (Cranie, vol. 1, p. 237) because the little dog could lead the way to the great dog's home in the west. Compare with the custom among other Amerind tribes (Brinton, *Myths of the New World*, 3d ed., pp. 279, 288-290).

⁴ See, for instance, *Eskimo Tribes*, vol. II, p. 27.

⁵ "The Girl and the Dogs," *Am. Anthropologist*, vol. XI, 1898, pp. 181, 209.

the stem *ikipa*, "kindles it", and the noun-ending *kaq* (*ng*), "having large"; hence, "having the great fire."¹

Among the Eskimò of Smith sound the children are of at least five kinds: Qavlunat (Europeans), Nakassungnaitut (?), Wolves,² Tornit (giants), and Inugandligat (dwarfs). In Baffinland and in western and southern Greenland there are but two sets — Qavdlunait and Adlet or Erqigdlet;— while in Angmagsalik, eastern Greenland, the number increases to three — Kavdlunat, Timerset (Inlanders),³ and Erkilit, with the tacit inclusion of the Inuit themselves. ("The Timerset come at night into the harbor to catch seals, and people can hear them there whistling and rattling, and they say to them—'ye may not do your cousins any harm.'")⁴

Qavdlunait, from *quagdlok* ("pure white"), may be translated "pure white people," or "the very white ones."⁵

Apparently Adlet is descended from *at*, "below," thus giving "those below"; but may it not be considered as a degenerate form of the stem *agdlak*, "striped, streaked," hence, "the striped ones"? This is a very appropriate term as now applied by the Inuit to the ruddier Amerind tribes to their westward, who doubtless painted. Erqigdlet ("nit people,")⁶ the equivalent of Adlet, must be regarded as a contemptuous epithet bestowed 'when their

¹ From the root *iki*, *ijä*, are derived *ikunuvog*, "it burns"; *ingucq*, "fire"; *inugapog*, "he has got fire"; *ignik*, "iron pyrites." Compare, for consonant change, the stem *iku* (Lahradia), *iä* (Central).

² The inclusion of wolves alongside of Qavdlunait is an argument against the rendering of that word by "wolves" as Fri Rink does.

³ From *time*, "central part": "*timredlig*, he who dwells farther up the country."

⁴ G. Holm, "Sagn og Fortællingen fra Angmagsalik," *Meddelelser om Grønland*, tode Hefte, p. 291: "*Timerset* ernes komme om Efteraaret ned til Havet for at fange Sæler, og Folk kan da høre dem fløjte og dundre, og sige saa til dem: 'I maa ikke gjføre Eders Fættiere nogen Fortræd!'" It is worthy of mention, in this connection, that the word *tungu*, used by the northern Alaskans for "white man," is traceable to *tunga*, a term expressing kinship: *tunka*, "kinsman"; *tunki*, "cousin."

⁵ From this stem, *qasä*, "light," come *qasarpak*, "turns pale"; *qasarpok*, "gray"; *qasarpak*, "is white"; *qava*, "south", etc.

⁶ From *erqig*, "a nit."

⁷ It is a matter of common observation that past or passing fear manifests itself in the calling of uncomplimentary or distorted names.

more warlike neighbors were no longer feared, partly from a sound resemblance, partly as a reference to their dog ancestry, the Eskimo dog being peculiarly the home of unwelcome guests. The transition is from description to contempt.¹

In the light of these meanings the story as given by Dr Boas may be interpreted as follows:

Savirqong, an old man, lived alone with his daughter Nivarsiang, or Uinigumissuitung.

She refused all her suitors.

At last a dog, Ijirqang, spotted red and white, won her affections and she took him for her husband.

They had ten children, five Adlet and five dogs (Qudlunait). Ijirqang did not go out hunting.

When the children grew up, they became very voracious and it was difficult for Savirqong to feed them.

At last the grandfather grew tired of it, put the whole family into his boat, and carried them to a small island.

Every day Nivarsiang hung a pair of boots around Ijirqang's neck, and he swam across to fetch meat.

But Savirqong, instead of giving him meat, filled the boots with heavy stones, which drowned the dog while attempting to return to the island.

The man must be considered as the personification of the visible circular world; the girl as the sun.

The sun does not marry and settle down.

The west.

The sun's rays, the red western and white eastern. The west is always in the west.

The sun's rays feed upon the ice and snow of the world.

Their transference to the west. According to another version, she fled to the island in the first place and there the children were born.²

The red glow coming across the water.

The glow sinks to the horizon and dies out. In another version, he is dragged down but manages to swim across.³

¹ Fra Rink (op. cit., p. 181) gives the ordinary reference of *Adlet* to *atlat* "others." Dr Boas' words, "five Adlet and five dogs," are quite capable of this reading, but it must be considered secondary, arising from phonetic similarity. The Adlet are known to the Inuit of Smith sound, though not expressly stated as descendants of this couple, being confused with Inuit living to their west. (Kroeber in *Bulletin Am. Mus. Nat. Hist.*, op. cit.) ² Kroeber in *Journal Am. Folk-lore*, vol. XII. ³ Ibid.

In revenge for her husband's death, Niviarsiang sent the young dogs to her father's hut and let them gnaw off his hands and feet.

In return Savirqong, when she happened to be in his boat, threw her overboard and cut off her fingers when she held to the gunwale. As they fell into the water they were transformed into seals and whales. At last, he allowed her to climb into the boat.

Fearing that her father might think of killing or maiming her children, she ordered the Adlet to go inland, where they became the ancestors of a numerous people.⁴

She made a boat for the young dogs, setting up two sticks for masts⁵ in the soles of her boots, and sent the puppies across the ocean. She sang "Angnaijaja! when you arrive across the ocean, you shall make many things giving you joy. Angnaija!" They arrived in the land beyond the sea and became the ancestors of the Europeans.

The ice is broken away and melted by the heat of the sun's rays. In eastern Greenland the grandfather comes in his kayak to bring food. The children, having eaten the food and the kayak, at their mother's command devour him;⁶ i. e., when the ocean is frozen over to the horizon, first the sea-ice is broken up and later the glaciers.

This is borrowed from the Sedna myth. The lack of coherence with this story stamps it as extraneous. It is absent in every one of the Greenland versions.

The western rays, later the redder Amerinds.

The eastern rays. The white light of morning has everywhere been looked upon as the bringer or producer of all things useful and pleasing.

⁴ Holm, *op. cit.*, p. 291: "Moderen havde sagt til dem, at de skulde spise Bedstefaderen. Da Børnene havde spist Madvarerne op, slikkede de Kajaken og sad den. Derpaa tog de fat paa Bedstefaderen og spiste ham."

⁵ Fru Kink comments on the selection of a willow-leaf for the Erqigillet boat, deeming its narrow shape unsuitable. Two reasons determined the choice: the long slender ray and the form of the kayak. It is probable that before their contact with Europeans, with their broad, shoe-shape vessels, both sets of children were launched upon leaves.

⁶ A late introduction due to the ships of the real, not the mythical, Qavluuat.

A noteworthy feature of this myth is what may be called its temporal index. It is clearly a day cycle, and as such dates back to a culture-home south of the arctic circle. Subsequent to the late rise of the proto-Sedna myth¹ the passage of the Inuit across the line brought the diurnal and the annual cycles into close relation. The recognition of their affinity resulted in a mutual borrowing—the introduction of the dogs into the Sedna story, the animal creation into that of the "Girl and the Dogs."

It is beyond the province of this article to do more than to refer briefly to the distinctively Amerindian type of this series. While it displays a broad and strong relationship to religious thought all the world over, its deepest affinities are rooted in the characteristic mentality of the red race. That certain analogous dog tales are reported from the folklore of other peoples is no more to be wondered at than the absence of myths parallel to the Sedna cycle from the cosmogonies of the rest of mankind. The unique geographical position of the Inuit has given to some of them a mythology peculiar to themselves.

¹ The existence of the annual myth, much altered and eroded among the Inuit of the Ungava district (Turner in *Eleventh Ann. Rep. Bur. Ethnol.*, pp. 261-262), vouches for one of two things,—the rise of a proto-Sedna myth prior to the coastwise migration northward into Labrador peninsula, or else the crossing of the strong current of Hudson strait by the Central Eskimo, carrying the arctic religion into a land sufficiently temperate for its significance to be lost. A bulwark of the latter hypothesis is the extremely close relation of the two dialects. On the other hand, the wide extension of deer and seal superstitions attests the great age of the seasonal cult.

BOOK REVIEWS

Certain Antiquities of the Florida West-Coast. By CLARENCE B. MOORE. Reprinted from the Journal of the Academy of Natural Sciences of Philadelphia, Volume XI. Philadelphia: 1900. 43 pages; maps, plans, plates, and text figures.

This latest work of Mr Moore has been issued with admirable promptness, a few months only having elapsed since the close of the field work. It is his seventh paper relating to the Florida region, the series constituting one of the most thorough and satisfactory archeological studies yet made in any part of America.

The recent explorations by Mr F. H. Cushing have aroused deep interest in the study of the west coast of Florida, and especially of the key remains; and the work of Mr Moore, covering a wider field, serves to assist in defining the relationships and limitations of the extraordinary culture phenomena of Key Marco.

The exploration extended from Clearwater harbor on the north to Chatham river on the south, and included the Tampa district, parts of the Alafia, Little Manatee and Manatee rivers, Sarasota bay, Pine Island sound, part of Caloosahatchee river, Estero bay, Key Marco and others of the Ten Thousand islands, and Chatham river. Two maps and several plans of the works assist in following the text.

Examinations in Tampa bay and its tributaries yielded some features of special interest. At many points are shell-midden deposits and mounds, ridges, causeways, graded ways, and canals, built of shell or sand. Many of the mounds are domiciliary, while others are undoubtedly mortuary. One of the latter, situated on Little Manatee river, some 25 miles south of Tampa, proved to be of unusual interest. It is "irregularly circular and rather rugged as to its surface, has a base diameter of about 58 feet, a height of 6 feet. From the southwest side of the mound an aboriginal canal, almost straight, runs a distance of 238 feet to the water. Leaving the mound the canal is 64 feet across, converging to a width of 36 feet at its union with the water. . . .

"The mound was of pure white sand, unstratified. At the very outset burials were encountered. In all, 112 burials were met with, classing as such human remains in which the cranium was present and omitting a limited number of bones found loose in the mound. These

burials were in a much greater state of flexion than we have usually seen in our mound work. The prevailing form of interment was a squatting position, the feet on a level with the pelvis, the legs against the thighs and these drawn up against the body. The upper arms were against the sides with the forearms sometimes raised parallel to the upper arms and sometimes on the chest, reaching to the neck. The head was bent over and forced down between the thighs, sometimes to the pelvis. Certain skeletons lay on the side with the same general arrangement of the extremities and the skull pressed over against the knees. So compact were these bundles of bones, which were not the bunched burial so often met with, where separate bones, not in order, are loosely piled in a heap, that we believe the skeletons in this mound, perhaps denuded of flesh, but held together by ligaments, were enveloped in wrapping of some sort and tightly bound with cord or sinew. One of these bundles of the average size was 23 inches long and about 26 inches in circumference."

Extensive remains were encountered a few miles below the mouth of Little Manatee river, where an island, called Indian Hill, about eight acres in extent, is almost covered with deposits of shell and irregular, massive, mound-like structures. Some of the latter reach the elevation of 33 feet, and are believed to be the loftiest works in the state. Human remains were found in one of the mounds.

The remains at Demorey key, Lee county, were described in some detail by Mr Cushing in a recent paper, and the examinations made by Mr Moore have added some points of interest. It was found that the conch-shell walls are in part or in whole of comparatively recent construction, since articles of iron, glass, and glazed ware were found beneath them. Mounds and other structures are believed to have undergone considerable modification at the hands of white settlers.

Mr Moore's work among the Ten Thousand islands is regarded by him as disappointing, especially with respect to finds of artifacts; but considerable valuable data have been added to our knowledge of the remains and their distribution. The intricate archipelago has never been mapped nor explored, and Mr Moore is led to believe that an insignificant portion of these islands has been occupied by the key-dwellers. Examinations were made on Little Marco island and on Marco island. It was on the latter that Mr Cushing made his marvelous finds of artifacts, excavated from the muck of ancient courts and canals. Mr Moore failed to obtain good results, digging in corresponding situations, and concludes that some special conditions must have conspired to bury and preserve the remains found by Mr Cushing.

The trip down the keys from Marco developed little of interest save

occasional shell deposits, until Chokoloskee key, Monroe county, was reached. This is a roundish island about half a mile in diameter, and is almost entirely covered with great shell deposits, with lofty works, graded ways, canals, and the like. One of the shell mounds is 27 feet in height. Numerous specimens of shell implements, as well as articles of stone and bone, were obtained from the island.

The author adds a section describing the interesting shell implements of southwest Florida, accompanied with numerous illustrations.

The enterprising character of the west-coast peoples is fully indicated by the prevalence of shell deposits and the extent and variety of monumental remains. The latter include mounds of various shapes — flat, truncated, and conical — graded ways, long ridges, embankments and breakwaters, and sunken courts and canals. With reference to the character of the dwellings and other buildings, but little is known beyond the facts ascertained by Mr Cushing on Key Marco, but it is probable that the pile-dwelling was of frequent occurrence among the keys. The artifacts include pottery, mostly in fragments and of varieties common in Florida. There are the well-made vessels with incised decoration most common on the western side of the peninsula, cruder pottery showing characteristics of the west, and occasional specimens of the stamped ware—the prevailing variety in the St John region. Shell utensils, implements, and ornaments cover the usual range; and stone implements, though comparatively rare, are mainly of usual types and indicate skill in all the processes of stone working. The specimens collected affiliate with the art of the known tribes of the southern states and appear to convey no suggestion of close relationship with the peoples of the West Indies, Yucatan, or South America.

W. H. HOLMES.

Das Blut im Glauben und Aberglauben der Menschheit. Mit besonderer Berücksichtigung der "Volksmedizin" und des "jüdischen Blutritus."

VON HERMANN L. STRACK. München: C. H. Beck'sche Verlagsbuchhandlung, 1900. 12°, xii, 208 pp.

This revised edition of an earlier work by the same author is a careful and comprehensive review of the uncanny superstitions in connection with the use of human blood and various portions of the human corpse in European folk-medicine and occult ritual. Special attention is given to the reputation of the old story that the Jews, in their Paschal ceremony, make use of the blood of a Christian child sacrificed for that purpose. Although it has repeatedly been proven that this accusation is an ignorant slander, yet within a year it has been revived in Bohemia, with tragic

results to the accused race. The author, who, as he expressly states, is German, a Christian by all his ancestry, has felt it his duty as a Christian minister and student of religions to stay the hand of persecution by correcting the error. He proves conclusively that the story is only another form of the old European superstition that youth and health may be restored by bathing in the blood of pure children. Other chapters deal with the superstitious eating of human flesh, the cure of disease by touching the body of an executed person, the candle held in a dead hand, by means of which thieves may steal without awaking the sleepers, etc., and an interesting section deals with the legal aspect of crimes committed under the influence of such beliefs. Altogether the work is a remarkable contribution to the history of occult ritual as existing side by side with the highest development of civilization. Among the numerous references we notice none from American sources.

JAMES MOONEY.

Les races de l'Europe. I. L'indice céphalique en Europe. Par J. DENIKER. (Association française pour l'avancement des sciences, Congrès de St Etienne. Paris: 1899.)

The present work of Dr Deniker, of Paris, completes his two previous preliminary papers on the anthropology of Europe (*Bulletin de la Société d'Anthropologie de Paris*, 1897, and *l'Anthropologie*, 1898) and forms the first part of his final memoir, which treats only of the cephalic index.

Even a superficial perusal of the contents and a glance at the accompanying colored map show the immense amount of labor bestowed on the subject. Deniker has analyzed and utilized all that has been published in different languages on the craniometry and cephalometry of European peoples. The total number of indices examined represents at least 380,000 measured individuals and skulls.

Deniker comes to the conclusion that the cephalic indices are distributed over four large, well-defined areas, shown on his map, viz., a dolichocephalic area, with mesocephalic enclaves, in the north; another more pronounced dolichocephalic area in the south; an area of strongly brachycephalic heads in the center of western Europe, and, finally, a sub-brachycephalic area in eastern Europe. Between these areas intermediate regions of cephalic indices and white spots, the latter indicating lack of data, are found. According to the cephalic index alone Deniker distinguishes four races in Europe, but when other physical characteristics are taken into account he comes to the conclusion that not fewer than six principal and four secondary races are represented in Europe,

It is obvious that there is no necessary relation between these different types and nationality or language.

As it is impossible to analyze, in limited space, a work like this, abounding in details, it may suffice to point out here its great importance to anthropology. An excellent bibliography concludes the work.

H. TEN KATE.

Indianer und Anglo-Amerikaner: Ein geschichtlicher Überblick, von GEORG FRIEDERICI. Braunschweig: F. Vieweg & Sohn, 1900. 16", 147 pp.

The author of this work is a German officer who, from long residence in this country, has been led to take an interest in Indian things. In a previous brochure he treated the subject of scalping, from the ethnologic standpoint. In this he discusses our Indian policy, or rather the general policy of the white colonists toward the aborigines of the present United States from the colonial period up to the most recent date. As all familiar with the subject are well aware, the history is a long record of aggression, massacre, and broken faith, in which every cruelty and perfidy of the savage was paralleled by the civilized conqueror. In Canada, for reasons which are explained at length, the interests of the native seem to have been better conserved, with the result that Indian outbreaks there are almost unknown. The author shows close familiarity with the literature of the subject, and every statement is substantiated by authoritative reference.

JAMES MOONEY.

Chronological History of Ancient Egypt. By ORLANDO P. SCHMIDT. Cincinnati: George C. Shaw, 1900. 8°, 569 pp.

This "self-verifying history," which is destined to make a lasting impression in the important field of knowledge to which it is devoted, covers the vast period from the founding of the ancient kingdom by Mena (4244 B.C.) to the beginning of the Persian dynasty (525 B.C.), in all not fewer than 3719 years. Schmidt's chronology did not originate in the annals of Manetho and Eratosthenes, but was actually copied from the hieroglyphic registers and tables, although the two authorities mentioned have served as aids in the restoration. Schmidt's chronology is adjusted to the sothic epochs, which were astronomically fixed, every one of them comprising a period of 1461 years. The author's first book is devoted to a description of the sothic system, and shows how the reigns were adjusted to the sothic epochs, explaining also the hidden meaning of the "epoch-titles" assumed by the "epoch-kings." These "epoch-reigns" have enabled the author to restore the chronology to a year, and the "epoch-titles" verify it beyond

question. This singular arrangement, peculiar to Egypt, may be made clear by the following examples: Chufu (Cheops) I was epoch-king "Mechiris" for twenty-two years after 3644 B.C.; Seti I was epoch-king "Osiropis" for twenty-three years after 1584 B.C. In following these indications it has been proven that "as far back as 4244 B.C. the Egyptians had the most accurate system of chronology ever devised by the ingenuity of man," and the basis of this marvelously accurate mode of computing years was the sothic system.

In the second part Schmidt treats of the history proper; the facts appear now in their proper relations and are illumined by startling discoveries. It is shown that there were but one hundred and forty-eight years between the "downfall of the old empire" (2948 B.C.) and the beginning of Manetho's twelfth dynasty, and but two hundred and forty-two years between the end of this dynasty and the Hamite (Hyksos) invasion (2348 B.C.). The five hundred and eleven years of the Hyksos dynasty came to an end about 1837 B.C., the celebrated "Tablet of four hundred years," set up at Tanis in the eighteenth year of Rameses II (that is, in 1544 B.C.), dating from the sothic epoch, 1944 B.C.

Astronomical data serve throughout as the framework of the history, and, as the author claims, inexorably sweep away a great mass of untenable theories and false notions respecting ancient Egypt, its people, and its memorable historical evolution.

It is the author's contention to prove beyond cavil that the epoch-titles are of greater chronologic value than the kings' dates transmitted by Manetho and others, and that they form, in fact, a canvas-table or framework into which the dynasty and rulers' dates must properly be entered in order to obtain a complete Egyptian chronology. The first three dynasties are perfectly historical, and not mythical as has been asserted. Mena, the first king of the first dynasty, headed the sothic year, which commenced 4244 B.C., when Sothis (the dog-star, Sirius) rose heliacally ("just before sunrise") on the first day of the month Thoth of that year. Mena's epoch-title is Athothis, which, in Egyptian, *Aa-tehuti*, is equivalent to "Offspring of Thoth." He governed sixty-two years and was succeeded by his son Teta. The dynasties which preceded Mena were, according to the ancients, dynasties of gods and of heroes. The latter were called in Egyptian *achi-u*, or the saints, and are mythical; Schmidt believes they were symbols or impersonations of the various attributes of the "hidden god," whose name, if known, was never written nor spoken, to whom no temples were built, and of whom no image was ever made, but who was worshiped in spirit and in silence alone.

A. S. GATSCHET.

PERIODICAL LITERATURE

GENERAL

Dickerson (Theophilus L.) Prehistoric knives. (*Am. Antiquarian*, Chicago, 1900, XXII, 78-81.) Considers the knife probably the first mechanical aid employed by man, and that it has continued as his most convenient implement.—H. I. S.

Frassetto (F.) Di altre e nuove fontanelle (fontanelle sotto-asteriche o mastoidee nel cranio umano e degli altri mammiferi). (*Riv. di Scienze Biol.*, Torino, 1900, II, 112.) In this very brief note Frassetto calls attention to the persistence (hitherto, seemingly, not reported or described) of the inferior posterior lateral fontanelle, which may be called the "mastoid fontanelle" by reason of its proximity to the mastoid foramen. This "new" fontanelle Frassetto has observed in man, the apes, and other mammifers.—A. F. C.

Garnault (P.) Ventriloque, nécromancie, divination, inspiration et prophétisme. (*Rev. Scient.*, Paris, 1900, 4^e série, XIII, 641-655.) An account of the way in which priests, magicians, etc., since the remotest antiquity, have taken advantage of man's imperfect eye and ear. Ventriloquy is very old, and also very widespread among primitive peoples (ancient Egyptians, Chinese, Zulus, Maoris, etc.). Speaking trees (in Greece), speaking statuary (China, Egypt), speaking corpses, etc., are very old. The Egyptian collection in the Louvre contains a statue with movable jaw, and some of the arcana of the Hebrews were in all probability "speaking statues." The palm of Deborah, the tree of life, the Delphic laurel, the oaks of Dodona were all means of "making the dead speak." The author notes the interesting fact that the prophet was originally the "seer," the one who sees. And much of early prophetism is naturally eye-minded.—A. F. C.

Günckel (Lewis W.) The symbol of the hand. (*Am. Antiquarian*, Chicago, 1900, XXII, 83-84.) Mentions repre-

sentations of human hands in Utah, Yucatan, Algiers, etc.—H. I. S.

Hagar (Stansbury) The Celestial Bear. (*Jour. Am. Folk-lore*, Boston, 1900, XIII, 92-103.) Observation of the stars exerted great influence over the native peoples of Central America and South America. The Pleiades and the Great Bear are conspicuous in their mythology. Cherokee and Micmac beliefs regarding the Great Bear are given. Accounts for calling the group by the name "bear" in parts of America by natural causes instead of by contact.—H. I. S.

Levat (L.-A.) Les origines de la ferrure. (*Rev. Scient.*, Paris, 1900, 4^e série, XIII, 754-756.) An interesting account of the origin and development of horse-shoeing. This art, according to the author, is "born of the Orient,"—the Mongolians, e. g., have known some sort of shoeing from time immemorial. Horse-shoeing appears also to have been known at a comparatively early date among the peoples of western Asia and of the regions about the Caspian sea. Their introduction into Europe is usually attributed to the "barbarian cavalry" whose incursions were such conspicuous features in the history of the later Roman empire. The shoes left on the fields of battle by the hordes of Gepids, Huns, etc., are said to have been the foundation of the European horse-shoeing art. The Narbonne finds take iron shoes back to at least the third century A.D., and the great Roman roads over portions of Europe seem to have caused their increased use after the dismemberment of the empire. By the eighth century they began to be universal. The horse-shoe figures conspicuously in heraldry and folklore.—A. F. C.

Peet (Stephen D.) The earliest constructed dwellings and the locality in which man made his first home. (*Am. Antiquarian*, Chicago, 1900, XXII, 85-100.) Assembles data regarding tree dwellings, caves, shellheaps, etc.—H. I. S.

Sensino (P.) A che debbono l'immunità dalle febbre gialla i Negri? (Riv. di Sci. Biol., Torino, 1900, II, 210-212.) After a brief review of theories and literature the author concludes that the present state of our knowledge concerning the immunity of the negro from yellow fever does not enable us to be certain whether such immunity is racial or acquired in some special way (alimentation, etc.).—A. F. C.

Super (Charles W.) The evolution of ethics. (Am. Antiquarian, Chicago, 1900, XXII, 69-75.) Ethics considered to be inherited convention more or less variable according to environment.—H. I. S.

UNITED STATES AND CANADA

Beauchamp (W. M.) Iroquois women. (Jour. Am. Folk-lore, Boston, 1900, XIII, 81-91.) Embraces only Iroquois of New York and Canada, near Lake Erie. Girls marry young but outside of the clan. Marriage of individuals of unequal ages was sometimes considered best, as the elder's experience would be useful to the younger. Women were of great influence politically; they nominated the chiefs. Polygamy was rare, as was also divorce.—H. I. S.

Blake (Wm. P.) Mosaics of chalchuite. (Am. Antiquarian, Chicago, 1900, XXII, 102-110.) Presents new examples and discusses a cross.—H. I. S.

— A pre-historic mountain village. (Am. Antiquarian, Chicago, 1900, XXII, 191-192.) Describes dwellings in Huachuca [Huachuca?] mountains, Cochise county, Arizona, now in the form of ruin mounds.—H. I. S.

Deans (James) A relic from the glacial clay of British Columbia. (Am. Antiquarian, Chicago, 1900, XXII, 75.) Reports finding a spearpoint in a clay embankment along a ditch while filling the ditch. Insufficient evidence for the author's belief that it goes very far to prove that there were inhabitants ingenious enough to form spearpoints before the glacial period.—H. I. S.

Laidlaw (G. E.) Archaeological discoveries in North Victoria county, Ontario, 1899. (Am. Antiquarian, Chicago, 1900, XXII, 111-115.) Nine

new sites found and three hundred specimens procured; domestic objects predominate; pottery and bone objects most frequently found.—H. I. S.

Moorehead (Warren K.) Rare archaeological specimens. (Popular Science, N. Y., 1900, 73: 93.) Illustrations and brief descriptions of specimens.—H. I. S.

Peet (Stephen D.) Coast and maritime structures. (Am. Antiquarian, Chicago, 1900, XXII, 157-180.) Illustrates some of Cushing's Floridian discoveries and considers pile dwellers.—H. I. S.

Prince (J. Dyneley) Some forgotten Indian place-names in the Adirondacks. (Jour. Am. Folk-lore, Boston, 1900, XIII, 123-128.) Gives derivations and meanings of place-names. Many of them are descriptive of natural features and might have arisen independently in several languages.—H. I. S.

Wheeler (Bennet C.) Aborigines of Susquehanna. (Popular Science, New York, 1900, 68.) Describes sites near Mt. Johnson Island, where many stone implements are found.—H. I. S.

Wickersham (James) Some relics of the stone age from Puget sound. (Am. Antiquarian, Chicago, 1900, XXII, 141-149.) The State of Washington is divided into a western moist, forest region with but few chipped archaeological forms, and an eastern arid region rich in chipped objects. Pestles, adz-blades, arrowpoints, war-clubs, stone pipes, etc., from western Washington are described. The author concludes that the Puget sound region is deficient in prehistoric stone art.—H. I. S.

EUROPE

Cazalis (H.) La science et le mariage. (Rev. Scient., Paris, 1900, 4^e série, XIII, 609-616.) In this article, the key-note of which is "the age of ignorance is gone, the age of science has come," the author advocates reforms in the marriage system of France. Among the points argued for are medical examinations of persons intending to marry and a prophylactic struggle against disease. The much greater proportion of illegitimate births in Paris as compared with the country at large is noted.—A. F. C.

ASIA

Carey (F. W.) Journeys in the Chinese Sian states. (Geog. Journ., Lond., 1900, xv, 486-515.) Some space is given to a description of the hill tribes of Yunnan. Historically, there is said to have been a gradual intrusion of Lolos from the north, pressing back the Shans, who formerly extended much farther to the north.—R. B. D.

Tappan (Leroy J.) Japanese ceramics. (Popular Science, N. Y., 1900, 55.) Describes some wares briefly.—H. I. S.

Webster (H.) Korea—the hermit nation. (Nat. Geog. Mag., Washington, 1900, xii, 145-155.) Brief description of the country and its people, with illustrations.—H. I. S.

Zaborowski (M.) Les peuplades rotouées de l'Asie centrale. (Revue Scientif., Paris, 1900, 4^e série, xiii, 466-467.) This brief paper is a critique of the previous articles of M. Saint-Yves in the same journal. He blames the latter for not relying more on ethnologic data and also for not making use of the works of M. de Ujfalvy. Another point criticized is the attribution to Siberia of a considerable and widespread population in preglacial times, and the endeavor to find in northern Asia the home of civilized man.—A. F. C.

AFRICA

Hilder (F. F.) British South Africa and the Transvaal. (Nat. Geog. Mag., Washington, 1900, xii, 81-96.) Contains brief descriptions of native tribes, and expresses belief that the future of South Africa depends largely on the treatment of the natives.—H. I. S.

Leprince (Jules) Une peuplade de la Guinée française, les Bagas-Forch (Rev.

Scient., Paris, 1900, 4^e série, xiv, 47-49.)

This is a brief account of the manners and customs of the Bagas-Forch, who, to the number of some 2000, dwell about the estuary of the Rio Nabea. Up to the present they have energetically refused white authority and civilization, being one of the most independent of all the African tribes. They seem to be without regularly constituted chiefs, and do not practice the hospitality so general among negroes. Marriage, birth, and funeral customs are briefly noticed, and the author thinks that in respect of many manners and customs the Bagas-Forch surpass in originality the other peoples of the West African coast. The blacks around them are said to consider these people as savages. The house-burial prevalent among the Bagas-Forch and the subsequent destruction of the mud-huts lead sometimes to the elevation of the house last constructed upon a mound 5 or 6 meters high.—A. F. C.

Mackinder (H. J.) A journey to the summit of Mt. Kenya, British East Africa. (Geog. Jour. Lond., 1900, xv, 453-486.) Contains a few references to the tribes inhabiting this region, especially the Wanderolo, who were met with on the mountains at elevations up to 12,000 feet.—R. B. D.

SOUTH AMERICA

Guevara (Tomas) Historia de la civilización de Aricaucania. (Anales de la Univ., Santiago, Chile, 1900, lvii, 1265-1289.) This section of Guevara's "Araucanian History" (forming chapter 1 of the Second part) treats of the discovery, first by the Peruvians, then by the Spanish of Chile, and the long struggle between the natives and the European invaders. A biographical account of Pedro de Valdivia and brief notes of other characters of the period are given.—A. F. C.

NOTES AND NEWS

Meeting of the American Association—The initial session of the Anthropological section of the American Association for the Advancement of Science took place on June 25th, in Schermerhorn Hall, Columbia University, New York, with vice-president Amos W. Butler, of Indianapolis, in the chair. The address of the vice-president was postponed until the meeting to be held in 1901. The morning session of the following day was devoted to purely psychological subjects, in conjunction with the American Psychological Association, over which Prof. Joseph Jastrow presided. The accompanying list of communications presented on this and the following days of the meeting shows a wide range of subjects, treated by well-known specialists. Four of the papers (*) appear in the present number of this journal.

Methods of Esthetics, by Henry Davies.

Practice, by Edward Thorndike.

New Method of Demonstrating Physiological Processes that are Dependent upon Mental Conditions, by J. McK. Cattell.

Studies in Vocal Expression, by Charles H. Judd.

Criminology, by Thomas Wilson.

A Method of Registration for Certain Anthropologic Data, by Amos W. Butler.

The Trap: A Study in Aboriginal Psychology, by O. T. Mason.

**The Ancient Aztec Obsidian Mines of the State of Hidalgo, Mexico*, by W. H. Holmes.

**The Obsidian Razor of the Aztecs*, by Geo. G. MacCurdy.

A Two-faced Navaho Blanket, by Washington Matthews.

**Archeological Work of the Jesup Expedition on the North Pacific Coast in 1899*, by Harlan I. Smith.

Cairns of Southeastern Vancouver Island and the Adjacent Coast, by Harlan I. Smith.

Giving Thanks: A Pawnee Ceremony, by Alice C. Fletcher.

The Shell Society among the Omaha, by Francis LaFlesche.

Kollmann's Reconstruction of the Head of a Woman of Swiss Lake-dweller Type, by Zelia Nuttall.

Brazil Robinson: Possessed of Two Spirits, by Roland Steiner.

The Responsivity of Mind, by W J McGee.

The Law of Conjugal Conation, by W J McGee.

A Civilized Heredity is Stronger than a Savage Environment, by Charles E. Slocum.

**The Sedna Cycle: A Study of Myth Evolution*, by H. Newell Wardle.

The Peruvian Star-chart of Sulcamayhua, by Stansbury Hagar.

The Bird-stone Ceremonial, by W. K. Moorehead.

A Navaho Initiation, by Washington Matthews.

Ancient Tombs at Milla, Mexico, by M. H. Saville.

Meaning of the Ancient Mexican Calendar Stone, by Zelia Nuttall.

A New Type of Pottery from Texas, by F. W. Putnam.

The number of communications was about the same as at previous meetings; several were of more than usual interest, and elicited general discussion, while some were illustrated with stereopticon views which were justly admired. An unusual feature of the meeting seemed to be the high value of several communications presented by younger members who are now coming forward in anthropological work. The most interesting feature of the meeting of Section H was an inspection of the anthropological treasures in the American Museum of Natural History. The session of Friday, June 29th, opened with the reading of communications in the lecture-room of the Department of Anthropology, after which the work-rooms and collections of the museum were visited by the members, guided by the curator and his assistants. Never in the history of the association have so many new collections and so much unpublished anthropological material been displayed at any one session of the section. At a business meeting held June 28th the council voted to change the name of the "Committee on the Study of the White Race in America" to the "Anthropometric Committee," and that on the "Introduction of Anthropologic Teaching" was made a standing committee of the council. Section H was empowered by the association to conduct a winter meeting at such time and place as may be determined by the sectional committee. The section voted to place in its records a series of resolutions on the valuable contributions to anthropology by the late Frank Hamilton Cushing, and to transmit a copy of the same to his family. Dr J. Walter Fewkes, of the Bureau of American Ethnology, was elected vice-president, and Dr George G. MacCurdy, of Yale University, secretary of the section for the ensuing year.

J. W. F.

The Name Cherokee and Its Derivation—The following tentative discussion of the derivation of the name Cherokee may be of some interest to the readers of this journal. Early in the autumn of

1899, Mr James Mooney, a co-worker in the Bureau of American Ethnology, submitted to the writer the term *Oyata'ge'roñno'* (usually written Oyatahgehronnon), the Mohawk-Iroquois appellation for the Cherokee (but sometimes embracing the Catawba and other southern Indians), for an explanation of its derivation and signification. The Onondaga form of this name is *Oyata'ge'heno'*, and that of the Seneca, *Oyada'ge'-ehno'*, both mere dialectic variants of the one first cited. Now, the final *-roñno'*, *-heno'*, or *-oñno'*, signifies "dweller (at) or inhabitant (of)," and it is an exact equivalent of the termination *-ite* in Canaanite or of *-man* in countryman, backwoodsman. The noun *oyata'* of the Iroquois proper (*odte'* of the Huron group) signifies "a cave, hollow, an excavation, or cavern"; and the locative particle *-ge'* means "at, to, at the place of." Hence, *Oyata'ge'roñno'* signifies literally "Dweller at or inhabitant of the place of caves, pits, or caverns." Such seems to be the origin and signification of this appellation. Mr Mooney informed the writer that the Cherokee themselves cannot explain the name Cherokee and that they prefer using the name Kituwáhá when referring distinctly to themselves as a people. The data obtained in the foregoing etymology of the appellation *Oyata'ge'roñno'* seem to indicate the derivation of the name Cherokee itself. The data and suggested etymology were placed by the present writer at the disposal of Mr Mooney to be used by him in a forthcoming work on the tribe named.

The suggested etymology of the name Cherokee is as follows: The earliest known form of this name is *Chalague*, and is found in the narrative of the expedition of Hernando De Soto into Florida in 1539-40. As the name appears to be of a source foreign to the speech of the Cherokee, and as it was first employed by persons who had hitherto never been in communication with the Cherokee themselves, it would seem profitable to seek an analysis of the name in the language of peoples contiguous to them, among whom De Soto's chroniclers first heard it.

An inspection of the names of places visited by De Soto in his journey shows that these peoples were of the Muskogean family. Now, the Choctaw name for a "Cherokee man" is *Chalukki hatak*; for "the Cherokee people," *Chalukki-okla*; and for Cherokeean, *Chalukki*. In Choctaw, *chiluk* or *chuluk* (both forms being in use) signifies "a cave, cavern, pit, 'not a hole through a thing.'" And the final *-i* (like *i* in machine) is the sign of the nominative or case absolute. Thus *Chiluki* or *Chuluki* is formed. But the more probable origin of the final *-ki* is in the analogic use of the rare plural ending found in words like *mikuki*, "chiefs," from *miko*, "a chief"; *hóktaki*, "women," from *hókti*, "a woman." Whence *Chilukki*, or *Chulukki*, which appears to be a con-

firmation of the derivation and signification of the Iroquoian *Oyata'ge'-roñno'* as given above.

Again, the Catawba-Siouan name for the Cherokee is *Mā'ntlra'* ye. *Montrān ye* and *Mantlrañ ye* are other orthographies of this name. *Ma'nu*, or *ma'no*, is the Catawba name for "ground, earth." The origin and meaning of the final *-lra'*, *-trān*, or *lrañ* may be found in a form analogous to the one in question. In *de ma'nodaré*, "I dig the ground," "I dig a grave," is found the literal meaning of the name *Mā'ntlra'*. Hence, it seems evident that the Catawba called the Cherokee "Earth-diggers" or "Earth-grubbers," apparently for the same reason that the Iroquoian peoples called them the "People of the place of caves."

Lastly, it may be interesting to point out the fact that *Talligew* or *Talligewi*, or preferably *Alligewi*, is evidently a Delaware name for the Cherokee, having a signification in accord with those of the terms and appellations previously discussed. Of *Talligew* or *Talligewi* Heckewelder interestingly says: "Colonel John Gibson, however, a gentleman who has a thorough knowledge of the Indians, and speaks several of their languages, is of opinion that they were not called *Talligewi*, but *Alligewi*. . . ." The present writer is in full accord with this opinion of Colonel Gibson. The Delaware term for "a cave, or excavation," is *walek*. In the "Walum Olum", or Painted Score, the locative case of this is found written *Oligonunk* and translated "At the place of caves." Now, from *walek* (*e* like *a* in *mate*), or *olig* of *Oligonunk* above, to *Alligewi* there is but a step. The final *-wi* in Delaware signifies "he is" whatever is expressed by the conceptual term to which it is suffixed. Hence *walek wi*, or *walekwēwi olig wi*, or *oligēwi*, signifies "he is a cave or he is of a cave" — a signification quite in accord with the other names hereinbefore discussed.

J. N. B. HEWITT.

The Buffalo Exposition — Dr A. L. Benedict, director of the Department of Ethnology and Archeology of the Pan-American Exposition, to be held at Buffalo in 1901, announces that the exposition has provided a circular building, 128 feet in diameter, and has also arranged a "Six Nations" Indian exhibit on the grounds, with a representation of the typic longhouse of the Iroquois and the attendance of some sixty Indians who will engage in their native industries. As these Indians have preserved to a great degree their ancient customs, they will celebrate in appropriate seasons their various thanksgiving festivals, dances, and other rites. Every precaution will be taken to protect exhibits against fire or theft and loss in packing and unpacking, consequently it is expected that a large amount of valuable archeological

material will be placed at the disposal of the department by museums and individual collectors. "In fact, it is not too early to assure the public," Mr Benedict says, "that the promises of such institutions as the American Museum of Natural History, the Peabody Museum, University of Pennsylvania, University of Chicago, and the Buffalo Society of Natural Sciences, as well as the coöperation of the ministers of the South American republics, guarantee the success of this department." However, as the aim of the department is not so much to assemble a large miscellaneous collection of relics as to afford means of popular instruction in American archeology, it is desired that students in all parts of the country shall send exhibits or memoranda descriptive of results obtained in their special fields of labor. For example, one exhibit will show the animals domesticated by the aborigines of the Western Continent, and will explain why the lack of large useful animals capable of domestication hampered the development of civilization in the New World. Through the coöperation of the Department of Agriculture and Horticulture, exhibits will be made of the plants cultivated in both North America and South America before the discovery. Often a placard is of as great value as the specimen, and one of the features of the exhibit will be cases describing in brief various types of stone-age implements and the methods of manufacturing them. Any student of American archeology who has elaborated some special phase of the subject and wishes to place his work before the public may submit a manuscript pertaining thereto, and placards prepared from it will be made, due credit being given to the investigator.

Field Museum and Pennsylvania University Expedition—Dr George A. Dorsey, Curator of Anthropology in the Field Columbian Museum, and Mr Stewart Culin of the University of Pennsylvania have recently returned from a collecting trip which they undertook together in behalf of their respective museums. Leaving Chicago in May, they visited the Sauk and Fox reservation in Iowa. From there they proceeded to Guernsey, in Wyoming, where they examined an Indian jasper quarry; then in order they visited the Shoshoni and Arapaho on Wind River reservation in Wyoming; the Bannock at Fort Hall, Idaho; the Ute at White Rocks and Ouray, Utah; and the Paiute at Pyramid Lake, Nevada. Going on to California, Dr Dorsey went to Ukiah and afterward to Klamath lake, while Mr Culin continued to Hupa valley, meeting again in Seattle. From here they proceeded to Neah bay, Washington, where they spent some days among the Makah. After a trip to Victoria and Vancouver, Dr Dorsey collected among the Nez Percés and Gros Ventres, while Mr Culin de-

voted himself to the Yakima and Umatilla. In returning they stopped at the Sioux reservations in Montana, North Dakota, and South Dakota. The scientific results of the expedition were very considerable and will be announced later in detailed reports. Together the collectors obtained between three and four thousand specimens. The expenses of the University of Pennsylvania's share in the expedition were defrayed by the Honorable John Wanamaker.

Brinton Memorial Chair—The Brinton Memorial Committee of Boston has issued an address setting forth the services to the cause of science rendered by Daniel Garrison Brinton, and explaining the conception of anthropology, to which especially he had devoted his life. The address recites:

"Scholars the world over are appreciative of the achievements of the late Daniel Garrison Brinton, for he established on a firm basis the branches of learning to which he devoted his life. He is justly named the 'Founder of American Anthropology.'

"A close student of the intricate problems of his science, he possessed the rare art of clearly and concisely presenting facts at their true value. He believed in 'the general inculcation of the love of truth, scientific, verifiable truth,' and that knowledge should subserve usefulness.

"A keen observer, a classical scholar, an adept in the methods of logic and philosophy, Dr Brinton had ever the practical application of truth in view. To the systematic study of man he brought to bear his all rounded culture to further the happiness and fulness of the individual life. He regarded the individual as the starting-point and goal of anthropology. Upon individual improvement, he claimed, depended group or racial improvement, social amelioration, and the welfare of humanity.

"Anthropology, the new Science of Man, in Dr Brinton's own words, 'is the study of the whole of man, his psychical as well as his physical nature, and the products of all his activities, whether in the past or in the present.'

"This broad comprehension indicates the significance of anthropological study. Its limits of attainment are limited only by the nature of man himself, and Dr Brinton asks, 'Who dares set a limit to that?'

"Although the youngest of the modern sciences, anthropology is none the less one of the most important of the sciences, for in its development is bound closely the progress of society. To carry out the aims of anthropology are required the results obtained from the study of ethnography, ethnology, psychology, folklore, and archeology,—more especially prehistoric archeology, which concerns itself not only with the ancient, but with 'the simplest' and 'most transparent and therefore the most instructive.'

"Notwithstanding the extension of this work in America, comparatively few professorships of anthropology or its branches exist, and the limited opportunity afforded students to qualify themselves for investigation in these various subjects is manifest. Dr Brinton pointed out the insufficiency of facilities for students to acquire the necessary preliminary training to fit them for research, and he advocated and urged that anthropology should be studied generally in our colleges. Provost Harrison referred to this in his address at the Brinton Memorial Meeting held in Philadelphia in January last, and stated that Dr Brinton had the utmost confidence in anthropology as a science

and also in its practical worth as an applied science in politics, education, and legislation.

"It is proposed, in recognition of the great services he rendered to the world by his teachings, numerous publications, and untiring zeal in unearthing the false and proclaiming the true, to establish in his memory a Brinton Chair of American Archeology and Ethnology in the University of Pennsylvania.

"This proposition has received the universal commendation and approval of anthropological scholars both in Europe and America.

"At the Memorial Meeting the plan was favorably mentioned, and grateful recognition accorded to Dr Brinton's unselfish devotion to his chosen life work. Provost Harrison thought that to honor his memory no more worthy tribute could be given than the foundation of a Brinton Memorial Chair in the University of Pennsylvania. Professor Putnam, following these remarks, said that he trusted the suggestion would not be dropped, but that something tangible would come from Provost Harrison's words.

"The choice of this place for the seat of the Brinton Memorial seems especially appropriate, since the University of Pennsylvania now possesses Dr Brinton's valuable library, his own gift shortly before his death. The association of Brinton's name with the University from 1886, when the Chair of American Archeology and Linguistics was created for his occupancy, may in this way be made permanent.

"In order to accomplish the proposed plan it will be necessary to secure an endowment of fifty thousand dollars from individual sources.

"Patrons of science and others interested in the endowment may apply to the Brinton Memorial Committee, 44 Mt Vernon Street, Boston, Mass., where further information is to be obtained if desired."

Jesup North Pacific Expedition—The *American Museum Journal* announces that Messrs Waldemar Jochelson and Waldemar Bogoras, of the Jesup North Pacific Expedition of the American Museum of Natural History, have recently started for the northeastern part of Asia, by way of San Francisco and Vladivostok, to continue the work of the Expedition in Siberia.

The region which Messrs Jochelson and Bogoras are about to visit is situated northeast of Amoor river. They will study the relations of the native tribes of that area to the inhabitants of the extreme northwestern part of America, and also to the Asiatic races visited by Dr Berthold Laufer, under the auspices of the Museum, and to those living farther west. It is expected that in this manner they will succeed in elucidating much of the racial history of these peoples, and it is hoped that the question as to the relations of the aborigines of America and Asia will be definitely settled. Thus the work of these explorers is part of the general plan of the Jesup North Pacific Expedition, which was organized for the investigation of the relations between the tribes of Asia and America. It is fortunate that this inquiry has been taken up at the present time, since the gold discoveries along the coast of Bering sea are rapidly changing the conditions of native life ;

so that within a few years their primitive customs, and perhaps the tribes themselves, will be extinct.

The expedition, after leaving Vladivostok, will go by sea to the northeastern part of the Sea of Okhotsk, where they will establish their winter quarters. Mr Jochelson expects to spend the winter among the tribes of this coast, part of whom belong to the great Tungus family which inhabits the larger part of Siberia, while others belong to a little-known group of tribes inhabiting the extreme northeastern portion of Asia. Mr Bogoras will make a long journey by dog-sledge across that part of the country lying north of the peninsula of Kamtchatka, and will spend much of his time among the Chukchee, whose mode of life is quite similar to that of the Eskimo of the Arctic coast of America. Mr Bogoras is exceptionally well prepared for this work, since he has spent several years among the western Chukchee, who are a nomadic tribe and subsist on the products of their large herds of reindeer. There is also a small tribe of Eskimo living on the Siberian coast whom Mr Bogoras expects to visit.

Mr Jochelson, after finishing his work on the Okhotsk coast, will proceed northwestward, crossing the high mountains which stretch along the coast, on a trail never before traversed by white men. Over this route he expects to reach the territory of another isolated tribe, the Yukagheer. On a former expedition Mr Jochelson visited a western branch of this tribe, whom he reached starting from Irkutsk, in southern Siberia. Owing to the difficulties of the passage, Mr Jochelson will not return to the Okhotsk coast, but will continue his journey westward through Asia, and reach New York by way of Moscow and St Petersburg.

Both Mr Jochelson and Mr Bogoras have carried on a series of most remarkable investigations in Siberia, which are at present being published by the Imperial Academy of Sciences in St Petersburg. The results of their previous investigations embody a mass of information on the customs, languages, and folktales of the tribes whom they visited.

It may be expected that their journey, which will extend over a period of two years, will result in a series of most interesting additions to the collections of the Museum, and in an important advancement of our knowledge of the peoples of the world.

Pueblo Ruins Reserved—Pending determination of the advisability of setting apart, as a national park, the region in the vicinity of Española, New Mexico, containing extensive pueblo ruins and the two remarkable groups of cavate lodges known as the Puye and the Shufiná,

the Commissioner of the General Land Office, acting under authority granted by the Secretary of the Interior, has directed the withdrawal from settlement, entry, sale, or other disposal, all of the vacant, unappropriated public lands within the following described boundaries: Beginning at the northwest corner of the San Ildefonso Pueblo grant, in township 20 N., R. 7 E., New Mexico principal meridian, New Mexico; thence southerly along the western boundary of said grant to the northern boundary of the Ramon Vigil grant; thence westerly along the boundary of said grant to the northwest corner thereof; thence southeasterly along the boundary of said grant to the Rio Grande del Norte; thence in a general southwesterly direction, down the Rio Grande del Norte, along its right bank, to its point of intersection with the township line between townships 17 and 18 N.; thence westerly along said township line to its intersection with the range line between ranges 4 and 5 E.; thence northerly along said range line to the southern boundary of the Baca location No. 1; thence easterly along the boundary of said location to the southeast corner thereof; thence northerly along the eastern boundary of said location to the northeast corner thereof; thence in a northeasterly direction to the southwest corner of the Juan José Lobato grant; thence northeasterly along the southern boundary of said grant to its intersection with the section line between sections 18 and 19 in township 21 N., R. 7 E.; thence easterly along said section line to its intersection with the western boundary of the San Juan Pueblo grant, thence southerly along the western body of said grant to its southwest corner; thence due south to the northern boundary of the Santa Clara Pueblo grant; thence westerly along the boundary of said grant to the northwest corner thereof; thence southerly along the western boundary of said grant to its intersection with the northern boundary of the San Ildefonso Pueblo grant; thence westerly along the boundary of said grant to the northwest corner thereof, the place of beginning.

It is hoped that the Commissioner of the General Land Office will ere long recommend the withdrawal of other tracts on which noteworthy ruins are situated, and that Congress will make provision for the employment of custodians for the protection of these interesting remains against vandalism.

Trumbull's Natick Dictionary—As previously announced in these pages, the *Natick-English and English-Natick Dictionary* compiled by the late James Hammond Trumbull, of Hartford, was presented by his daughter to the American Antiquarian Society of Worcester. Arrangements have since been made for the publication

of this monumental work as the first of a new series of Bulletins to be published by the Bureau of American Ethnology, uniformly with its Annual Reports, under authority granted at the last session of Congress through the instance of Hon. Ernest W. Roberts of Massachusetts. The manuscript Dictionary, in the compilation of which Dr Trumbull devoted the best years of a long and busy life, consists of four quarto volumes. The first of these is his "rough draft" of some 300 pages of the Natick or Massachusetts language as it was written by John Eliot, for the Dictionary is compiled from Eliot's translation of the Bible and his other works of translation, with some additions from other sources (notably Josiah Cotton's *Vocabulary* and Roger Williams' *Key*), and equivalents in other Algonquian dialects. In the first draft, however, Trumbull followed Cotton in entering the verbs under the form that Eliot regarded as their infinitive mood. Discovering his error when it was too late, he began a revision of the entire work, entering the verbs under the third person singular of their indicative present (*avrist*) in their primary or simple forms. After several years of labor in this revision, three other manuscript volumes were produced, two of them, comprising 175 and 106 leaves, respectively, forming the Natick-English, the third, of 264 leaves, being devoted to the English-Natick. The revision of the manuscript, however, was never completed; it lacks all between *Nishk* and *P*, and *U*, *W*, *Y*; but these lacunæ are readily supplied from the "rough draft." At the present writing more than half of the Dictionary is in type, and it is expected that the volume, which will contain an introduction by Dr Edward Everett Hale, will be published before the close of the year.

Mexicanists will find a treat in the first half of Dr Eduard Seler's "Eighteen Annual Festive Periods," published in the May, 1899, issue of the *Veröffentlichungen aus dem Königlichen Museum für Völkerkunde*, of Berlin (4°, pages 25-204). Dr Seler's treatise is based mainly on the various ethnographic writings of Bernardino de Sahagun (died 1590) on the customs, manners, history, mythology, and esthetics of Mexico, which he was enabled to study at a period when they were comparatively undefiled through contact with civilization. The eighteen periods, falsely called months, of the Mexican calendar comprised twenty days each, which, with five accessory "unlucky" days, or *nemon-temi*, constituted the year. At the beginning of each of these twenty-day sections a festive period of one to three or more days was celebrated; it had a religious character, and was attended with processions, dancing, singing, masquerades, and mummery, as well as by those awful sacrifices of children, slaves, and prisoners of war who,

before the slaughter took place, were compelled to follow the idol of a deity to the temple devoted to its worship. This first part of Dr Seler's work is illustrated by numerous contemporary pictures and also by Sahagun's Nahuatl texts. There is little need to say that these texts, with Seler's German translation, render the treatise of high value.

A. S. GATSCHET.

Berendt Catalogue—There has been reprinted from volume 2, number 4, of the *Bulletin* of the Free Museum of Science and Art of the University of Pennsylvania the highly interesting *Catalogue of the Berendt Linguistic Collection* prepared by the late Dr Brinton in 1884. As is now well known, this splendid collection of Central American linguistic and ethnologic material, covering 183 titles, was acquired some years ago by Dr Brinton, who, shortly before his death, presented it, with his library, to the University of Pennsylvania. The collection is now in the library of the Free Museum of Science and Art of that University. We are glad to announce that plans have been perfected whereby the celebrated manuscript Maya dictionary known as the *Diccionario de Motul*, which was copied from the original in the John Carter Brown Library at Providence in 1864 and elaborately annotated by Berendt, will, it is expected, be sent to press within a year.

At a recent meeting of the Museums Association at Canterbury, Professor W. M. Flinders Petrie advocated his plan of building large but inexpensive sheds to house ethnological and archeological material. The plan is to acquire about a square mile of land within an hour's ride of London and to begin to build large galleries uniformly on what might be called a gridiron plan. The proposed galleries should be about 54 feet wide and 400 feet apart, so that after completion there would be room for additions six times as large on the intermediate ground. The plan would involve the construction of about four hundred feet of gallery per year, or eight miles in the century, leaving six times the space to be covered by irregular additions as required. The financial demands of the scheme for land, building, and staff might be met by a fixed charge of £10,000 per year.—*Science*.

A patriotic movement has been made by a group of ladies in Denver, Colorado, who have organized the Colorado Cliff-Dwellings association and have succeeded in leasing from the Ute Indians, at \$300 per annum, the tract of land on which the celebrated cliff-dwellings of Mesa Verde are situated. It is the intention of the Association to prevent the further destruction of these notable structures, and to

build a rest-house, repair the roads, etc. The officers are Mrs Gilbert McClurg, regent; Mrs W. S. Peabody, vice-regent; Mrs J. D. Whitmore, recording secretary; Mrs C. A. Eldredge, corresponding secretary; Mrs George Sumner, auditor; Mrs M. D. Thatcher, treasurer, and Mrs T. A. Lewis, historian. These, with Mrs H. C. Lowe and Mrs Ed. Stoiber, form the board of trustees of the association.

Dr David P. Barrows, professor of history in the State Normal School of San Diego, California, has issued a syllabus of a course of study in anthropology for class work and correspondence teaching. The syllabus covers fourteen chapters, namely, I, Origin of the human species; II, Man's place among the primates; III, The body and mind of man; IV, The races of men and the basis of racial distinction; V, Prehistoric man; VI, History of culture; VII, Nations of the white race; VIII, Racial contact through geographical discovery; IX, The Asian race and its history; X, The negro race of Africa and Melanesia; XI, The American race; XII, Unclassified races and peoples; XIII, A review of racial endowment; XIV, Problems of modern civilization.

An instructive dictionary of Chilean-Spanish dialectic terms has been prepared by Anibal Echeverría i Reyes, under the title *Voces Usadas en Chile* (12^a, Santiago, 1900), and dedicated to the Academia Real of Spain. The volume begins with a list of works consulted in its preparation, followed by an essay on truncations and disfigurements of classic Spanish in Chilean speech, as *ojeto* for *objeto*, *perfeto* for *perfecto*, *acsolver* for *absolver*. The lexicon comprises pages 118 to 245, each page containing about thirty terms. The list includes many words unknown to European Spanish, as well as a number of Chileanized aboriginal terms and a sprinkling of English and French vocables.

A. S. GATSCHE.

Dr John R. Swanton has been appointed an ethnologist in the Bureau of American Ethnology for work principally in connection with the Siouan languages. Dr Swanton has received special training as a student of philology, in Columbia University, under Dr Franz Boas, and his thesis for the degree of Doctor of Philosophy, published in the last number of this journal under the title *Morphology of the Chinook Verb*, was accepted by the committee of the division of archeology and ethnology of Harvard University. Dr Swanton was the only applicant for the appointment named, and the result of his examination by the Civil Service Commission was highly creditable.

Brinton Bibliography—Mr Stewart Culin, Director of the Free Museum of Science and Art of the University of Pennsylvania, has

published a *Bibliography of Daniel G. Brinton, M.D.*, based mainly on an annotated bibliography, down to 1892, prepared and printed by Dr Brinton. Although book reviews, brief notes, purely literary articles, and medical writings are not included, the bibliography comprises 210 titles. Reprinted from the *American Philosophical Society Memorial Volume*, Philadelphia, 1900.

The Rev. Thomas D. Weems, of Decatur, Illinois, has given his archeological collection, numbering eleven hundred and forty specimens, to the Powell Museum of the Illinois Wesleyan University. The collection contains figures, vases, pictured stones, ceremonial stones, tablets, pipes, arrowpoints, spearpoints, celts, sinkers, knives, saws, hammers, scrapers, plummets, discoidals, mortars, pestles, and copper, bone, and shell implements and ornaments.

Mr G. B. Gordon, of the Peabody Museum, who has charge of the explorations to be made at Copan, has secured from President Sierra of Honduras, for Harvard University, by treaty arranged at Tegucigalpa on February 22d, the control of the ruins of Copan and the lands pertaining thereto, for a period of ten years, with the right to make excavations and to remove to Cambridge for preservation a portion of the objects that may be found.

MINOR NOTES

GENERAL SIR ROBERT MURDOCH SMITH, K.C.M.G., director-general of the Museum of Science and Art of Edinburgh, died on July 3d, aged sixty-five years. He had been engaged with Sir Charles Newton's archeological expedition to Halicarnassus, had conducted explorations in Cyrenicia, and was the author of *History of Recent Discoveries at Cyrene* and of a *Handbook of Persian Art*.

PROF. W. P. BLAKE, of the University of Arizona, at Tucson, is said to be preparing a bibliography of Arizona, with special reference to writings relating to the Pueblo Indians and cliff-dwellers.

A CIVIL PENSION of twenty-six pounds has been granted by the British government to Mr Benjamin Harrison in consideration of his researches relating to prehistoric flint implements.

DR. J. WALTER FEWKES, of the Bureau of American Ethnology, has been elected a corresponding member of the Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.

THE RETIREMENT of Dr Emil Schmidt, honorary professor of anthropology and ethnology in the University of Leipzig, has been announced.

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PHILOLOGY, OR THE SCIENCE OF ACTIVITIES DESIGNED FOR EXPRESSION

By J. W. POWELL

INTRODUCTION

The fourth group of arts in the scheme hitherto presented in this journal consists of the languages which men devise to express their thoughts. Every art has its foundation in nature, for art arises through the attempt to improve on nature. Activity, as we have defined it, or self-activity as it is often called in psychology, is the primeval expression of animals by which their thoughts are interpreted by other animals. This primeval activital expression assumes a new phase under development, when it is known as the language of the emotions. In fact, primitive activital expression is the germ from which all other kinds of language are developed.

All nature is expressive, but activital nature is especially expressive of mind. Thus activities constitute a natural language expressing the minds of activital bodies, but such expression is not designed to be understood by others; it is therefore not conventional, and therefore not artificial. Natural expression must be distinguished from artificial expression or language, for natural expression is not designed to convey concepts, while

expressions which are designed to convey concepts constitute language. Hence language may be defined as the artificial expression of concepts in judgments by words in propositions.

Natural methods of activity are themselves indicative of thought which others may interpret, but when activities are conventionally produced for the purpose of expression and interpreted as such by others, language is produced. The producer of the speech implies the interpreter of the speech, and the two by custom come into a tacit agreement or understanding by which the language becomes artificial as conventional. So language may again be defined as an activital movement designed to convey thought to others.

It may be well to re-examine briefly the nature of activital movement, although the subject has more elaborate treatment in my former work entitled *Truth and Error*. Movements in the animal body are performed by muscles. The muscles are found in opposing pairs, or more or less in opposing groups, which have the function of contracting and relaxing, and one may contract while the other relaxes and thus originate a movement in the animal body. The contraction and relaxation are produced through the agency of metabolism. When metabolism is constructive it is called anabolism, when it is destructive it is called catabolism. I suppose that catabolism produces contraction and that anabolism produces relaxation, but of this I am not sure. Certain it is that when muscles are contracted and relaxed, metabolism in both its methods is involved, so that all muscular action is founded on metabolic action, and metabolic action involves affinity, which is choice, as we have heretofore deductively demonstrated. The movements in animals which depend on muscular action due to the function of opposing muscles, one of which relaxes and the other contracts, we call activity. Activity is under the control of the will, for the individual animal controls activity indirectly by controlling the metabolism of molecules. It is thus that activity is innate in every living animal body.

EMOTIONAL LANGUAGE

The natural expression of strong emotion is cultivated by man in the earlier stages of society and likewise in childhood, so that an artificial language of the emotions is produced. Thus we have in laughter the language of joy, and in weeping the language of grief, each highly expressive of emotion.

To man who already uses language in its highly developed state, it may seem at first blush that laughter is a purely natural ebullition of joy, but on further examination he will see that it is no less artificial and conventional than the term joy itself; yet it is probably universal with mankind and is an expression inherited from his anthropoid ancestor. Those species nearest allied to this anthropopithecus indulge in laughter, and even squirrels chatter in a manner exceedingly suggestive of laughter.

Of what emotion laughter is the expression in its purely natural state we are left to conjecture. Let us assume, as seems probable from the little evidence we have, that it was the expression of joy, for it has this meaning with the species allied to anthropopithecus. Then came a time when laughing was conventional, as being designed for such expression that others who heard might understand it in this manner; then laughter became true language as we have defined it. Used at first with difficulty, it speedily became easy, and becoming easy it gradually became habitual, and finally instinctive by inheritance. The nature of this process can well be illustrated by citing the case of screaming, of which we will treat a little later. Even laughter is consciously used with designed expression, as when we laugh at things which are not amusing to us out of courtesy to others, when its original nature becomes apparent.

In treating of emotional expressions it will serve present purposes to speak only of one meaning for each expression; thus we speak of laughing as an expression or word of joy, but laughter, like all words in spoken or written language, has many meanings: in fact, emotional signs are especially characterized by multifarious

meanings; for this reason emotional language is highly ambiguous and a ready tool for deception.

Smiling as an expression of pleasure.—In smiling we have an expression of an emotion, less intense than that of joy, which may best be called pleasure. In laughter the muscles about the mouth, especially the risorius, are contracted, as also are the orbicular muscles about the eyelids. The group of muscles involved may be called the smiling muscles. The smile needs no further description. It expresses pleasure in a great variety of meanings, and it is clearly seen to be artificial, whether the approval be genuine or assumed.

"I set it down

That one may smile, and smile, and be a villain."

Weeping as an expression of grief.—In weeping tears flow and various muscles about the eyelids, especially the orbiculars, are involved, for through their agency tears are produced. The expression of sorrow is also found about the corners of the mouth which droop. All the muscles that take part in the expression, and there are many, may be called the muscles of grief. Those naturalists who are also psychologists explain the origin of weeping in the irritation to which the eyes are subject from smoke, dust, or other foreign particles and from scratches and blows. Primitive man seized upon this natural effect of discomfort to artificially produce weeping in order that he might express grief to others. Thus weeping became a linguistic sign, and a linguistic sign is a word in the generalized meaning of the term. Weeping is expressive of many emotions, hence the word has many meanings. Like all other signs of emotion it may be used in the practice of deception.

Sobbing as the expression of despair.—Sobbing is caused by sudden or spasmodic inspiration and is accompanied by the facial signs of grief through the action of the muscles of grief. Habit has made it instinctive, but its true nature as an artificial sign is plainly exhibited when sobbing is simulated.

Screaming as a sign of command.—Screaming is common to many of the lower animals, both mammals and brutes; it seems to be universally used by the young as a cry for help, and is thus subject to the will. In the human infant the instinct of screaming is exhibited before that of weeping. It is probable that all generations of human beings and generations of remote prehuman ancestry practiced the art. In the human being it is a cry or command for relief, and is so interpreted by every mother. Thus a cry has evolved into a word.

Bodily attitude as a sign of anger.—The emotion of anger, which is naturally expressed by striking, has many concomitants. In the infant it is accompanied by kicking and the general activity of the body which may be called squirming. This general activity causes a determination of blood to the head, so that the angry person becomes red. Another accompaniment of anger is the assumption of an attitude of belligerence, when the form is held erect, the hands are clenched as fists, and the arms held akimbo. With the adult striking and kicking are often inhibited, while there yet remain the attitude and the flushed face. This attitude is a true linguistic sign and hence a word. Sometimes the anger is expressed by simulated kicks, but usually this expression is one of contempt. Among some of the lower races the expression of striking is with the hands, for they are more accustomed to slapping than to fisticuffs.

Showing the teeth as a sign of rage.—Rage is a more intense anger, and to the sign of anger is added an additional element which is earlier than that sign. Brutes fight mainly with their teeth, and express their anger by showing their teeth, especially their canines; they also express anger by bodily attitude, and finally they express it as an artificial sign by erecting the hairs of the body, especially around the head and neck, thus causing a show of great size and strength. There remains with the more evolved man the sign-word of exposed teeth, in which the canines especially are displayed, as a habit inherited from the brute. It

is thus that the more intense anger which we call rage is artificially expressed by man in an exhibition of the teeth, and perhaps in grinding them together.

Compressing the lips as a sign of determination.—The compression of the lips as a word expressing determination or fixed purpose is universal among mankind. In origin it probably expressed the meaning, "there is no further word to be said." If so, its meaning has gradually changed. With this meaning it has become habitual and hereditary, so that the expression is made when the determination is made, without conscious intent to express this meaning to others, yet it is still used with this intent when we wish to simulate determination.

Frowning as a word of disapproval.—Disapproval is expressed by frowning which as a sign has become an artificial word. No word of emotional language is more common or more readily understood, and yet it is not devoid of ambiguity. It is expressed by the eyebrows through the corrugator muscles. But as these muscles are used in many other signs there is an element of uncertainty in its interpretation.

Many other activities are used for expression. We may mention a few more without discussing their origin. They are, averting the head as a word of disdain; shrugging the shoulders as a word of doubt, hesitancy, or helplessness; raising the eyebrows as a word of surprise; turning the eye without averting the head as a word of warning; beckoning to approach; beckoning to depart; beckoning to keep silence; beckoning not to move; nodding assent; shaking the head in negation, etc.

The principle of antithesis has been potent as an agency in the development of emotional language, as from its nature it is the expression of judgments about qualities. Qualities are always antithetic. This is one of the characteristics by which they are distinguished from properties and quantities. Darwin, in his *Emotions in Man and Animals*, abundantly demonstrates this principle.

In a subsequent article we shall attempt to demonstrate that the emotions are fundamentally and properly classified as feelings, enjoyments, affections, understandings, and sentiments.

ORAL LANGUAGE

One method of expressing emotional language has been developed as oral speech. The characteristics of this method peculiarly fit it for development in the first stages of human culture. The organs of speech can be used when the organs of locomotion and manipulation are otherwise employed. This characteristic serves a double purpose: it is advantageous to the maker of speech, and it is also advantageous to the interpreter. In visual language the interpreter must have his attention pre-adjusted thereto, while in order that it may serve his purpose the maker must also see that attention is paid. The conditions for conveying speech are superior in these respects to those for conveying visual language. Doubtless this advantage led to the development of speech in advance of the development of gesture language.

With the development of speech the organs with which it is produced were evolved until an apparatus was constructed capable of making with precision the differentiated sounds of speech and music, and of combining them into syllabic successions and the syllables into polysyllabic words. Doubtless the experience of very many generations was necessary to the production of the apparatus requisite thereto, and without doubt it can be affirmed that oral speech itself was developed in many of its essential characteristics during the process.

From study of the speech of birds we are led to conclude that the primitive speech of man was probably exclamatory, and that the first words were designed as warnings, calls, invitations to mates, and other simple expressions. To these were then added pronouns which served both demonstrative and personal functions. The *I*, the *you*, and the *he* probably subserved the purpose

of the *here*, the *there* of you, and the *there* of him, for which specialized cries were developed even as they are among the lower animals. Such cries may best be called exclamations; thus the exclamation is the first part of speech. It is a verb or word of the imperative mode in being an exclamation, and it is a noun in being a pronoun. In this stage parts of speech are undifferentiated, for every word served the purpose of all parts of speech. Refined distinctions of thought and refined distinctions of expression were not as yet.

From observations of child-language and from observations of bird-speech it seems probable that inflections or glides of the voice from higher to lower keys constitute the primitive method of differentiating the meanings of such words. Then perhaps adjectives of good and bad were developed, not as adjectives but as asserters of good and evil. They were thus verbs as adjectives and as asserters. Thus pronominal verbs and adjectival verbs may have been made ere the organs of speech were fully developed for the expression of well-differentiated sounds. Words of a simple character were made with undifferentiated meanings, of undifferentiated sounds, by undifferentiated organs. Thus far we may legitimately go, guided by the phenomena of bird-speech and child-language. To trace the evolution of oral language beyond this stage we must depend on vestigial phenomena.

To set forth the characteristics of oral speech it will be found advantageous to explain the evolution of its characteristics as found in the higher languages. For this purpose it becomes necessary to explicate the elements of oral speech. These elements are (1) sounds, which give rise to the science of phonics; (2) vocables or words, which give rise to the science of lexicology; (3) the use of words in sentences, which gives rise to the science of grammar; (4) the derivation of words one from another, which gives rise to the science of etymology; (5) the significance of words, which gives rise to the science of oral sematology.

PHONICS

The advantage which sound possessed over other elements of emotional language caused it to be much used and thus to be highly developed. In the process of this evolution special organs of speech were produced. Vocal speech thus became universal with mankind. In the passage of air through the throat by inhalation or expulsion, sounds are emitted by means of the vibration of the vocal chords, which sounds are made in great variety by lengthening or shortening the chords and by passing the air with greater or less force. Another class of sounds are produced by the modification of breathing with the lips, teeth, tongue, palate, and nostrils. The consonants may be classified in this manner.

With such a complex apparatus, subject to the will of the speaker, a great variety of consonantal and vowel sounds may be produced. In the practice of ages the undifferentiated sounds made by primeval man are gradually specialized. This specialization pertains more to the consonants than to the vowels. A peculiarity is found in these consonantal sounds, for in the different languages particular differentiations occur more or less characteristic of them severally, so that a language may often be distinguished by its consonants. One language may be remarkable for its development of labial sounds, another of dental sounds, another of lingual sounds, another of nasal sounds, another of palatal sounds.

Again, languages may vary in being more or less vocalic; that is, the speakers may resort more or less to the vocalic sounds as compared with the consonantal sounds. Again, there are certain sounds that are intermediate between vowels and consonants, and these may prevail to a greater or less degree in different languages. It is thus that the vocal apparatus of sound used to express speech in voice is capable of producing a great number of different sounds when we consider all the languages of mankind. On the other hand, when we consider the sounds of any particular language we find that only a limited number of

well-differentiated sounds are used. Perhaps two or three score of such well-differentiated sounds will be discovered. If for any language we wish to represent every sound by a distinct character, the problem is more easily solved because the number of sounds to be represented is thus restricted. Should we wish to represent all the sounds of all the languages by distinct characters, so that one character will stand for its special sound and no other, the problem is not so easily solved. The characters, then, are far more numerous.

Very much practice and great painstaking are required to discover the sounds of an unknown tongue. The speech of one man differs from another in the emission of sounds, even though they may have a common language. There are thus innumerable slight differences in the sounds produced in the same language by different persons, but habit interprets them according to a common standard which is established by vocal and written spelling. The habit thus formed of interpreting the sounds of the language to a conventional norm renders it very difficult to interpret the sounds of an unknown tongue. It is thus that students of the lower and unwritten languages use very different characters, because they interpret the sounds of such languages by assimilating them to the sounds with which they are more or less familiar; and there are instances in which the same person will interpret a sound as one thing and then another by its associations, and even in the same word the sound will have a double interpretation on different occasions or when used by different persons. There are certain characters used to represent sounds in which this liability to misinterpretation is common. Such are the sounds represented by *l* and *n*, the sounds represented by *p* and *b*, and even by *p*, *b*, and *w*. In one language related sounds may not be differentiated, and the synthetic sound produced will then be interpreted in varying ways. It is thus that the student of the phonics of many languages will always have a perplexing problem to solve.

Primitive languages are widely separated from one another. As they are now found they are already evolved into a high state of complexity and special sounds are developed in every one, for the centuries during which they have been spoken cannot be enumerated. Some languages are more highly evolved than others, but there is no reason to believe that one tongue has its roots more deeply embedded in antiquity than another. Surely no philologist would dare to affirm that the roots of one language are more ancient than those of another.

The philologist may compare a language as it is spoken now with the same language as it was spoken in some ancient time, and he may also compare a less developed language with the ancient stages of a more highly developed language. In doing this he may speak of a current language as if it were antique; but we must understand by this not that he affirms greater antiquity for the language, but that he affirms for the methods of the lower language a state of evolution revealed in the ancient forms of a highly developed tongue.

LEXICOLOGY

I use the term lexicology to denote the science of vocables or words. The dictionary and the thesaurus illustrate two methods of assembling words for use. By one they are arranged alphabetically, by the other they are arranged classically with an alphabetic key. The science of words is pursued in both of these methods, and I call the study of words the science of lexicology. It will be seen that this science is well differentiated from the other sciences of language, although it cannot dispense with phonology, grammar, etymology, and sematology, for the elements of language are concomitant.

For dictionaries the alphabetic arrangement of words is not only convenient but necessary to their utilization. A classification of words by their meanings is a very difficult task which has never been accomplished in any perfect manner, and yet such

a classification, to which an alphabetic key is appended, is very useful to the scholar who is careful in the selection of his terms.

A *vocable* is a succession of sounds that are emitted in a prescribed order. This constant order by much repetition establishes a habit of emission which integrates the word and distinguishes it from other words. Thus an habitual succession of sounds constitutes a word. In sentences words are used also in succession, but the successions are variable and hence they do not integrate by habitual expression. In sentences the variability in the order of expression is an agency by which the sounds are prevented from coalescing; in words the invariability produces coalescence, so that we may define a word as a succession of coalescing sounds. The degree of coalescence is variable, and the degree of the separation of words in the emission is variable. Thus words may be of more than one syllable and yet the syllables be distinct in a minor degree, while the words of a sentence flow into each other so that one sentence may be distinguished from another, but the separation of words is more distinctly marked than the separation of syllables.

In the production of words from sounds idiosyncrasies prevail which are peculiar to the different languages severally. In one language certain sounds will not coalesce with certain other sounds to the extent necessary to the formation of a word, but one or the other of them will be modified. Facility in the combination of sounds into words is thus variable from language to language.

GRAMMAR

Grammar is the science of arranging words in the sentence. Sometimes it is called syntax. Grammar is held to include other of the elements of language; but we have already seen that the elements of language are concomitant, and one cannot be considered without implicating the other, and often overt affirmation is necessary. The word and the sentence may be identical units;

that is, a word may be a whole sentence. In some languages most sentences are but single words. In the examination of the many languages spoken by mankind they are found to differ from one another in the degree in which they construct monovocable sentences. It may be affirmed that the greater the prevalence of monovocable sentences the lower is the language in the scale of culture.

The characteristic which we have here described has been called by various terms, as synthesis, polysynthesis, or encapsulation—using as a figure of speech the inclosing of boxes, one within another, in the order of their size. Perhaps it will be better to use the term coined for the purpose by Lieber. He calls such languages "holophrastic", and a word-sentence may be called a "holophrasm." Bird-sentences seem to be holophrasms, while some bird-songs may be sentences composed of more than one word. In child-speech we discover that the first words spoken are sentences. We may thus conclude that the primal speech was holophrastic.

We must now set forth the manner in which speech is developed from the primitive holophrastic condition to that which has sometimes been called analytic, but which we will here call organic. The terms synthetic and analytic are misleading in that they implicate fallacies, hence we have selected the terms holophrastic and organic as they will better convey our meaning.

The organs of a sentence are the parts of speech of which it is composed. We must therefore deal with the parts of speech.

In words the office of assertion is fundamental. This office is often called predication. Attempts have been made from time to time to group the things which can be asserted or predicated, and they have been called predicaments. In that stage, which we have reason to believe to be universal in the lowest culture, all the offices of words are performed by one holophrasm. I say to an offender, "Go!" I mean by the expression, You, the offender, and I further mean to assert a command that he leave

my presence. All of these things are implied in the word *go*. The word *come* may thus be used. So we may use a great variety of imperative verbs. In like manner all adjectives may be used. In savage languages adjectives may be conjugated as verbs in the different voices, modes, tenses, numbers, and persons. We have in English many so-called verbs which are in fact adjectives used as verbs in this manner. Participles and adjectives are one in office; only difference in office constitutes different parts of speech. In all verbs the office of assertion still remains in the word. Words which still retain this office are called verbs, whether they express action or not; that which is essential to the part of speech which we call a verb is the office which it performs as an asserter. When the verb *to be* is used as an asserter it is a more fully differentiated verb. All other verbs are less differentiated, for they perform other offices in a greater degree. In the expression "I hear", *hear* is both an asserter and an adjective. The two offices may be differentiated by using two words, "I am hearing", *am* being the asserter and *hearing* the adjective. Even yet *am* is not a fully differentiated asserter, for *am* also conveys the idea of first person, singular number, and present tense.

The degree to which the offices of words are specialized is variable in different languages, and it is also variable in different ways of expression found in the same language. The verb often contains in itself the elements of the holophrasm which may or may not be repeated in the sentence when the verb is said to agree in such characteristic with its subject or even with its object, using these terms in their grammatical sense. This is a characteristic of the classical languages. Such tongues give duplicate expression to ideas, and hence require duplicate efforts of thought and expression.

The evolution of modern languages out of languages in which holophrastic methods prevail has as its essential motive economy of thought and speech. This is obtained by the atrophy of

methods of agreement. When number is expressed in the noun, in the adjective, and also in the verb or asserter, the number must be considered three times and expressed three times. The greatest economy is yet not all told. When such methods of expression are replaced by organic methods and only one word is used to express the number, it is found that in the vast majority of cases the purpose of the speaker is better accomplished by omitting to express the number. It is thus that in a perfectly developed organic language it is possible for the speaker to give his attention exclusively to the expression of the thought desired, and he need not detain the locution to consider and express multifarious inconsequent details. Why should a person in speaking of a ship be compelled to think of its number, its gender, and its case every time he uses the word, or the verb with it, or the adjective with it, when such particulars are of no consequence in the narrative?

The varying of forms of words to express particulars about the thing of which the word is a name is called inflection. The classical languages are thus highly inflected. The modern languages which have developed from the classical stage are more thoroughly organic. Yet men with linguistic superstitions mourn the degeneracy of English, German, and French without being aware of the great improvement which has been made in them as instruments for the expression of thought.

All words are names, and names are used in sentences for the purpose of making assertions. A sentence consists of a subject, an asserter, and an object. The subject is that of which something is asserted. The object is that which is asserted of the subject, and the asserter is that which predicates the object of the subject. In the science of language subject and object are terms used in a different sense from that in which they are used in psychology. Sometimes the sentence is said to be composed of subject and predicate, in which case the asserter and the object are considered as one; but this habit involves an error in the

discrimination of the offices of words. It is fundamental to the sentence that the three offices should be performed.

The offices of words in sentences, as distinguished from their meanings, are as subject, asserter, and object; but as we call the asserter a verb we may say that the primary parts of speech are subject, verb, and object. Then there are subordinate parts of speech. The subject may be qualified, limited, or defined; we shall call such subordinate words adjectives. The verb may also be qualified, limited, or defined; that is, the assertion may be affirmative, negative, or conditional; we shall call such words modals. Again, the object may be qualified, limited, or defined; we shall call such words adverbs. Thus the six parts of speech are the subject, verb, object, adjective, modal, and adverb.

The grammars of the higher languages have hitherto been constructed on the theory that the classical languages were the proper standard of comparison, but in English certainly there is a tendency to construct grammar on the theory that the standard of comparison must recognize the subject, the asserter, and the object, which are then treated as defined or modified by subordinate elements. Already this change has made much progress, for practical teachers find that the elements of grammar when considered in this manner are far more simple and lend themselves better to intelligent instruction.

ETYMOLOGY

Etymology is the science of the derivation of vocables or spoken words. Human cries are probably the elements from which words are derived, and words have been evolved therefrom by the gradual differentiation of specialized sounds as the apparatus of speech has been developed.

That words may serve the purpose for which they are designed in expressing concepts they must be enunciated by the speaker and heard by the person addressed. In making and receiving the sounds of speech the persons who are in daily association

coöperate, so that the development of speech is a demotic process, for words must not only be spoken but heard, and they must be informed with thought if they convey thought. In tribal life, which is the earliest society, the tribe constitutes the body of persons by whom a language is developed.

We shall hereafter see that in this state an intertribal language is evolved which involves other methods of speech not produced by the vocal organs. This intertribal language is gesture speech. Gesture speech thus seems to be the normal language for intertribal communication so long as tribes remain distinct.

In the evolution of social groups one tribe coalesces with another. Some tribes develop their numbers to such an extent that they fall apart and no longer actively coöperate in the development of oral speech. The coalescing of distinct tribes or of fragments of distinct tribes is one of the great agencies in the evolution of language. Distinct tongues render mutual aid in the process. The language originating in this manner is compounded, and a wealth of synonyms is produced which readily take on specialized meanings highly advantageous, particularly to people who extend over a wide area of country in search of food or impelled by a desire for barter, and especially is it advantageous for tribes or portions of tribes that migrate to new habitats. In early society migration is a potent agency in the evolution of language. New scenes originate new thought, and new thought promotes new expression, and the new expressions are most readily learned from new tongues. It is thus that the vocables of a language are multiplied as synonyms by the coalescing of distinct languages, which words ultimately have specialized meanings.

This process has been continuous among mankind. Small tribes have become great tribes, and tribes have become nations, and nations have been absorbed by nations until the multitude of tongues spoken in savagery have been greatly reduced in number and the tongues spoken by the developed nations of civilization have become few in number. This is the grand factor in the

evolution of language, thoroughly attested by the history of civilization, while the tribes of savage and barbaric people are found with a much greater diversity of tongues.

New thoughts come with advancing culture. The words by which the new concepts are expressed may be new words from new languages, but often, and perhaps usually, the new thoughts are expressed by the old words. It is a slow process by which the new thoughts are expressed by differentiated words derived from distinct tongues. When new meanings are desired, some modification of the old words is made. In this manner one word is derived from another. Languages integrate by coalescing and differentiate words as parts of speech by derivation.

With advancing thought new concepts arise. For these new concepts new words may be coined, or the synonyms of coalescing languages may be used; but the usual method is to use an old word with a new meaning: this leads to duplicate meanings of words. In every language words have many meanings. If the words of the English language were multiplied so that one word should have but one meaning, and if synonymous words were reduced so that one meaning should be expressed only by one word, still the number of words in the language would be multiplied several fold. Duplicate meanings give rise to ambiguities, for the speaker may use a word with one meaning and the hearer may interpret it with another. There is a mechanical habit of using words by which many fallacies are produced in logic. That pseudo-science which is known as formal logic is provocative of these fallacies, for formal logic is a system of reasoning with words rather than with things. When we remember the number of distinct meanings with which words are conventionally endowed, it is not surprising that such fallacies should spring up; but it is surprising that they should be used from generation to generation and from century to century, so that fallacies of antiquity should still survive.

The rules for deriving one word from another differ in the

different languages, but the method of deriving one word from another is universal. There is a mnemonic advantage in knowing the derivation of a word. Wishing to express ideas, the words are more easily recalled for deft expression through the laws of association, and words which are unfamiliar may be recognized by recognizing the elements of which they are compounded.

In the early history of the European nations the literature of Hellas and of Rome played an important part in human culture, for the Latin and Greek languages were the repositories of the thought to which scholarly men most resorted, and learning itself was dependent on these languages; so that learning was often considered as the acquisition of the language rather than as the knowledge of the thought contained in the literature of the language.

In the derivation of new terms with the progress of culture, resort was had to these classical languages for the new terms which were needed, and scholars developed a system of rules which were expressed or implied as regulations for the derivation of new words. One of these rules was a prohibition upon the compounding of words from the elements of two languages; thus Greek and Latin elements should not be compounded in one word. As many of our words are not immediately derived from Greek or from Latin, the same rule was sought to be enforced with them all, and the words not compounded with the authority of these conventions were considered to be barbarous or unscholarly. Most new words are not produced by scholars, but by the common people in everyday speech, and thus a commonplace dialect is produced which scholars are ultimately forced to adopt in order that they may be popularly understood. Yet there is a sentiment, whether well-founded or not, against the coining of new terms from other tongues than the Latin and the Greek, and against the mixture of different linguistic roots. Sometimes these conditions are carried so far that the new term must be made according to the methods practiced in the Greek or the Latin at some particular time in the history of those languages.

Comparing those languages which exhibit the most highly differentiated parts of speech with the languages of savagery, we are able to discover the course of evolution in the past, and we may with some confidence predict their further evolution and even surmise the outcome—that is, the nature of the ideal language to which all languages are tending. The vast integration of tongues which has already been accomplished tells of a time when there will be but one human language as oral speech, and the state which will be reached in the specialization of parts of speech may be stated as a surmise in the following way:

There will be primary and secondary parts of speech. The primary parts of speech will be the subject, the verb, and the object, which will be distinguished as words. The secondary elements will be definers. The definers of the subject will be adjectives, which will be words, phrases, or subordinate sentences. There will be modals to define the asserters for the purpose of distinguishing affirmation and negation and all conditional modes of assertion; these modals will be words, phrases, or sentences. There will be adverbs to define the objects; these also will be words, phrases, and sentences. We may conjecture that to such a stage the parts of speech will be differentiated, guided by the motive for economy in thought and expression.

SEMATOLOGY

Sematology is the science of the signification of oral words and sentences. In considering this subject it becomes necessary not only to consider the significance of words, but also the development of the significance. "Words are signs of ideas," or, as we say, words are signs of concepts. It is fundamental that we recognize bodies as such by their properties, and cognize properties as good or evil for our purposes as qualities. The nascent mind speedily learns by experience that different properties inhere in the same body. The mind thus posits or implicates the existence of one property when it cognizes another. The bodies of

the world are cognized by the use of the five senses, every one of which primarily deals with a special property. The senses in highly developed man, though fundamentally devoted to a distinct property, have become highly vicarious, so that one sense seems to cognize all of the properties. The origin of this vicarious action of the senses is founded on the concomitancy of properties, for in cognizing a property we recognize other properties. In the developed mind every act of cognition is also an act of recognition; it is an act of cognizing one property and of recognizing others. This may be stated in another way: When we cognize a property we implicate the existence of other properties. All this has been set forth in another volume, but it requires restating here that we may properly understand how the meanings of words are produced.

The first words were calls, then came demonstratives, then adjectives of quality followed. Things were called by such names as "the sweet", "the bitter", "the high", "the low", "the fierce", "the gentle"—so the qualities were parceled out to things as their names. Researches in the etymology of the lower languages to discover the roots of words seem to lead to this conclusion. Not only were bodies named by their qualities, but properties also were named by their qualities. As gradually the qualities of things were discovered, quality names were differentiated; then property names were differentiated, and then the names of bodies themselves were differentiated. In savagery every property is known as a quality and is called by a quality name. Even the sunset is read as a beautiful color in the hue of rejoicing instead of as a hue in the rate of vibration revealed in the spectrum of light. Properties are known as qualities in savagery. As various properties are found in the same body, the names by which they are called may stand for the body itself. Thus every body may have a variety of names depending on its properties conceived as qualities. The discovery of this characteristic is the first contribution made to the science of language

through the study of ethnic or tribal languages. Max Müller, with characteristic deftness and scholarship, was, so far as I know, the first to clearly propound this doctrine. He seems to have derived it from a study of the appellations of the deities. Surely it was Max Müller who caused it to be accepted as a law of philological science. The same deity could be invoked by many names, and could be praised in varied speech; and when another god is addressed, many of the same terms can be employed. The substrate of this custom is found in the concomitancy of qualities and properties. Every god in savagery is the wisest and the best betimes, and every god has superlative attributes. The evolution of the meanings of words must first be considered as a development in knowledge by the discovery of new qualities, and new properties must be considered as qualities due to their concomitancy.

In primitive society the discovery of new bodies is ever in progress by a law of mind. As they are discovered they are affiliated to those already known and described in terms of the known. When experience finds it desirable to discriminate, the terms of expression are gradually differentiated, and thus new methods of speech arise. In savage society the tendency is to produce a holophrasm by modifying the old. As a linguistic phenomenon, classification is thus an agency for the development of speech. By classification the same body may have different names. Thus, while the same body may have different names by reason of its different properties, it may also have different names by reason of the different classes to which it belongs in the hierarchy of classes. In this manner names are greatly multiplied. Again, by evolving culture, things previously utilized come to be used and are given names which also signify their uses, so that names are multiplied by utilization. Meanings undergo corresponding evolution; the impulse for different meanings becomes the impulse for different names. This is general; the purpose gives rise to the expression.

The confusion which arises from the failure to distinguish consciousness from cognition, or the workings of the mind due to the organization of the nervous system from the substrate of mind as exhibited in all bodies even without organization, led to the theory of ghosts. This theory, which has also been called animism, induced savage men to personify all bodies. The personification in savagery was developed into similitude which is fully evolved in barbarism. In this stage of society a multitude of similitudes are found which in a later stage give rise to allegory, a variety of which is parable, and finally allegory is developed into trope. The meanings of words are multiplied by this agency, for the same word may have different tropic meanings, or, as it is often expressed, words may have figurate meanings. The giving of words figurate meanings is founded on the concomitancy of properties, and is developed in a multitude of ways all through the course of culture until it appears in the highly developed language as trope.

Here we may pause to note the fallacies of reasoning which are developed by the figurate meaning of words—fallacies so subtle that, although discovered by the ancient philosophers, who failed not to give their warning, they have yet been the bane of logic exemplified in all metaphysical literature. *Form* is the Anglo-Saxon term by which internal structure is designated, but as the internal structure gives rise to the external shape, both structure and shape are expressed by the term *form*. A spoken word is a succession of sounds. By a figure of speech we speak of the spoken word as a *form*, meaning thereby a succession which is an element of time, not of space. This usage is convenient, but it must be carefully distinguished when we reason, for the confusion which arises when a time succession is confounded with a spacial series is such a fallacy in science as to be disastrous. In psychology contiguity in time and contiguity in space are often confounded as one principle, especially in discussing the laws of memory.

The term *form* is sometimes used with a figurative meaning in other ways, as when we say "the *form* of an argument," meaning thereby the *constitution* of an argument, or the order in which the averments occur. In this sense every argument has a form; but it is not the form of space—it is the form of succession or time. When the argument is committed to writing, the letters may have forms as the sounds have succession: but the letters not only have forms, they also have successions. In the same manner written sentences have forms as well as successions. In this fact there is another source of obscurity in the use of the term *form*. Rightly understood it is proper, but if neglected it is a source of fallacy. In philosophy it is better to use the term *form* only to express structure and shape as they are found in space.

The story of the confusion of meanings in the use of the term *form* is yet but imperfectly told, for there are many derivatives of the word, as *formation* and *formative*. We may use the verb *to form* in any of the senses of "to make", "to produce", or "to generate." Sometimes we may be considering only the spacial form, but when we are considering some other topic the word is used in a sense which may give rise to confusion. I may combine oxygen and hydrogen and produce water, and I may say that oxygen and hydrogen *form* water, when I mean that they produce water, or that the combination of the two substances results in water. The use of the term in this manner serves a convenience and rarely leads to misapprehension; but when in science we use the term *form* out of its spacial significance, philosophy is apt to degenerate into metaphysic.

We might go on to set forth the use of *form* and its derivatives in other senses than that of spacial form, and still the subject would not be exhausted—not even in a great tome. Words in English derived from languages other than the Anglo-Saxon are subject to the same confusion of meaning. Morphology is the science of form, and yet the term is used as the name of a journal which deals mainly with the genesis and evolution of plants and

animals of which the forms of plants and animals constitute but a comparatively insignificant part, for the journal is devoted mainly to the genesis of function. Metamorphosis is used not only to signify change of form, but also the change of all other properties.

This habit of using words with figurative meanings leads to bad reasoning. Spencer, in the first volume of *The Principles of Ethics*, presents a masterly chapter on the relativity of pains and pleasures. Here, in the use of the term *absolute*, he distinguishes it from the relative by properly implying that what is relative must also be absolute. The same act is absolute as an act, though relative in its consequences.

Subsequently in his work Spencer sometimes uses *absolute* in another sense. Thus he speaks of "absolute ethics", meaning thereby conduct perfectly or superlatively ethical, and he uses the term "relatively ethical" to mean imperfectly ethical. No harm would be done by the use of the words in this manner did he not use a doctrine which he had previously developed about the absolute and the relative in ethics, as if he had demonstrated the same doctrine about the perfect and the imperfect in ethics; hence his consideration of perfect and imperfect ethics is vitiated.

Please permit the expression of an opinion about the origin of a fundamental fallacy in Spencer's *Principles of Ethics*: He fails to discover the true nature of ethics and its origin in religion, primarily by the failure to discriminate between perfect and imperfect on the one hand, and absolute and relative on the other; hence he confounds ethics with justice. The principles of justice are evolved under the sanctions of legal punishment, while the principles of ethics are evolved under the sanctions of conscience. Of course a discrimination of words must follow upon the discrimination of meanings, but the habit of using words with different meanings is apt to prevent the proper evolution of concepts.

Knowledge increases by the discovery of new bodies, new properties, and qualities. As new concepts are added in this manner, new methods of expression must be coined. The first

method is by asserting the existence of the new thing; after a time the new thing is given a name. It is the habit of modern science to give this new name at the time of the discovery, but in work-a-day life this is not common, and a name must be developed by experience.

We have next to describe a method of developing the meanings of words which has not only been universal but also has been very efficient. This method has been called a "disease of language". When a fog settles over the coast, it may sometimes be seen as a cloud of moving vapor; at other times to descend as fine drops of rain, when it is described as a "long-stemmed" mist by seafaring folk. In the same manner I have heard the shower which is composed of very large drops of rain to be described as a "long-stemmed" storm. Let this method of expression become habitual to a people, and the term *long-stemmed* will become an adjective descriptive of storms. Then the different words will coalesce and drop some of their sounds, and there will be an adjective descriptive of storms as "long-stemmed". Again, a storm of rain may be called a "long-stem", and the connotive meaning may be lost and the denotive meaning remain in common comprehension. I have known sailors to speak of a storm as a "long-stem". It is reasonable to suppose that the term *long-stem* might be used in this manner: As we may say of a man who is characterized by his fits of anger that he is a "storm", so we might say of such a man that he is a "long-stem", until an angry man might habitually be called a "long-stem". The "disease of language", as it has been called, is thus the specialization of sentences into words and the use of connotive terms as denotive terms.

Literary men are forever giving new meanings to old words. Lang, in the first volume of *Myth, Ritual, and Religion*, says, "It is 'a far cry' from Australia to the West Coast of Africa." We have only to suppose that the term *cry* becomes a measure of distance as the term *foot* was developed, and that the term be

used only in this sense, while other synonyms are used in what is now the ordinary sense, and we have a fine illustration of this phenomenon.

What has been called a "disease of language" is the substitution of a word to express a new meaning and the atrophy of the old meaning.

The Aryan Problem

In the study of the languages of the earth we find in a general way that the more primitive the culture of the people the fewer are the people who speak a common tongue and the greater are the number of distinct tongues. By a world-wide review of this subject we reach the conclusion that every tribe in the beginnings of human speech spoke a distinct language.

We cannot pause to completely assemble the data on which this conclusion is founded, but it seems that a language as an art of expression was originally developed by every distinct body politic. The persons who habitually associated as a body of kindred developed a language for themselves. Thus in thought we have to view an ancient condition of languages when every tribe had a tongue of its own and hence that the number of languages was approximately equal to the number of tribes. Languages thus commenced as a babel of tongues.

If we investigate the modern development of any one of the languages of higher civilization we find its elements to be compounded of many diverse tongues. What we know by historical evidence we are compelled to infer as true of all existing languages, and in fact no language—not even that of the most savage tribe—can be intelligently studied without discovering evidence of its compound character.

We must now call attention to the process of evolution of languages in which they are integrated—that is, they are forever becoming fewer in number. They do not multiply by evolution; they integrate. With this process of evolution, languages forever differentiate more thoroughly specialized tongues; they also dif-

ferentiate more thoroughly specialized parts of speech, and they also integrate and differentiate meanings. The process of evolution in language, therefore, is the integration of distinct languages and the differentiation of more specialized elements.

Many of the nations of Europe and America speak languages which are held to be cognate, and thus most of the more highly developed languages of the earth are said to belong to one family. These tongues are called Aryan. Linguists have devoted great labor and profound scholarship to the task of discovering a primitive Aryan speech on the theory that this supposed ancient common speech has been differentiated into the tongues of the Aryan nation, the theory being that of a single people inhabiting some limited locality in Europe or Asia. Opinions that were held of the degeneration of mankind gave rise to the theory, and scholars began the research by assuming degeneracy of speech, and by assuming the multiplication of tongues with the lapse of time. Research which has been pursued with so much labor and learning has failed to discover either the land or the people, but has forever resulted in the discovery of more and more diverse elements in the speech of the Aryan nation until few scientific linguists remain to speak of the separation of the Aryan tongues.

The course of history has been continuous in the integration of languages, and no language can be found at the present time that is not a compound. In this compounding of languages many tongues of today have common elements, and the higher the language the more diverse are the elements that have been incorporated. Yet men will still seek to solve the Aryan problem!

GESTURE LANGUAGE

Gesture language, like oral language, has its foundation in natural expression and emotional language. In the earlier history of speech it was ancillary thereto, and yet as language it remained more rudimentary and hence it retained more of the

characteristics of natural expression. As tribes developed speech independently, every one for itself, gesture language, which still retained many of the characteristics of natural language, became a means of communication between tribes having diverse tongues. The gestures themselves, though remaining largely natural, gradually became somewhat developed conventionally. Notwithstanding these artificial elements, gesture language in all history has been characterized by great crudity, and it largely resembles emotional language because both of them are akin to natural language. The gesture language which is found in tribal society was replaced by written language, as we shall hereafter show; but new gesture languages have from time to time been devised for use by those unfortunate people who have been born deaf or who have by disease been rendered deaf. Therefore the nature of gesture speech is learned from the study of two distinct examples—the languages of intertribal society on one hand, and the modern languages of deaf-mutes.

While intertribal languages are founded on natural expression, and while some of the deaf-mute languages also are founded on natural expression, others of the latter have a more highly artificial or conventional structure. When the sounds of spoken words are represented by manual signs, or the letters of the alphabet are represented by finger-wrought signs, then gesture language itself consists of signs for signs and the vocal signs themselves standing for concepts. This form of gesture speech is therefore very highly conventional.

It is not consonant with our present purpose to further enlarge on this topic; it is necessary only for us to mention gesture language as one of the pentalogic series that the complete series may be exhibited.

WRITTEN LANGUAGES

Modern written languages differ from speech in that sounds are represented by letters. Letters, therefore, are signs for

signs. When we study the history of the origin and growth of written language we find that it does not always use the method of representing sounds by written characters. In the Chinese, for example, the written characters have no reference to sounds as sounds are analyzed in phonics. Thus the Chinese have no alphabet. When we come to investigate the origin of alphabets we are led into a vast field of research in which we find that alphabets have a long history as picture-writings anterior to their development into alphabets. In tribal society all written language is picture-writing, used mainly for religious purposes. The pristine picture-writing was a means of communication with the gods and a method of record necessary for the proper observance of religious ceremonies, and especially of the time when such ceremonies should be performed. Thus the chief picture-writings of tribal society are calendric.

In the lower stages of society, when spiritual properties are held to live a distinct existence from the other properties of bodies, so that animism universally prevails, then ghosts are invoked for the purpose of gaining their assistance in the affairs of human life. The oldest differentiated calling in society is that of the shaman—a man who is supposed to have skill in communicating with ghosts. He who makes a profession of ability to communicate with ghosts is called in various languages by various terms that we now translate as *shaman*—a term derived from the early study of the Africans along the Guinea coast. The shaman is thus a man who claims to hold linguistic intercourse with ghosts. The shamanistic profession is practiced in every tribe, and it is through invention by shamans that picture-writing was devised, and it is further through their invention that picture-writing was developed into alphabetic writing.

It will be equally interesting and instructive to contemplate the origin of picture-writing. It is common in savage society to hold periodical festivals with fasting, feasting, music, dancing, dramatic performances, and athletic sports on the occasion of

making invocation for abundant harvests. There are many other occasions for like festivities with all their accompaniments. One example will suffice to set forth the nature of the picture-writing displayed on these occasions, and we will select for this purpose a calendric festival of rejoicing after the harvest-home which is also a prayer for future good harvests.

The festival to which I am now to refer was continued through several days. At one time the shaman and the members of the shamanistic society over which he presided were gathered in a kiva or underground assembly-hall where midnight prayers were made for abundant crops. On this occasion the customary altar was arranged with the paraphernalia of worship. Among other things were wooden tablets on which were painted the conventional picture-writings for clouds and lightning, below which were the conventional signs for raindrops, and below the raindrops the conventional signs for growing corn.

In order more fully to understand these picture-writings we will mention some of the other objects placed on the altar. There were wooden birds painted and placed on perches; there was a ewer of water about which ears of corn were placed; there was a case of jewels—crystals of quartz, fragments of turquoise, fragments of carnelian and small garnets;—then there was a bowl of honey upon the holy altar. When the shaman prayed he asked that the next harvest might be abundant like the last; he prayed that they might have corn of many colors like the corn upon the altar; he prayed that the corn might be ripened so as to be hard like the jewels upon the altar; he prayed that the corn might be sweet like the honey upon the altar; he prayed that the corn might be abundant for men and birds, and that the birds might be glad, for the gods love the birds represented upon the altar as he loved men. Then he prayed that clouds would form like the clouds represented upon the altar, and that the clouds would flash lightning like the lightning on the altar, and that the clouds would rain showers like the showers represented on the altar, and

that the showers would fall upon the growing corn like the corn upon the altar—so that men and birds and all living things would rejoice.

In savagery and in all barbarism such festivals are very common, and much of the time is occupied in worship. In savagery worship is terpsichorean, and in barbarism it is terpsichorean and sacrificial, and in both stages of society all amusements are religious. So in tribal society all time devoted to amusement is religious. These ceremonial festivals are held in regular order through the seasons from year to year. For this purpose a calendar is devised in weeks and months, when the days of the year are numbered in a hierarchy of weeks and months. The number of weeks in a month and the number of months in a year vary greatly. The months and years are counted off and the seasons are indicated by the appearance of stars as signs of the zodiac. Now, these numbers, together with the signs of the zodiac, are arranged in calendars, and the principal events of each festival are recorded under the calendric signs or picture-writings. Great ingenuity is needed to symbolize the principal events of the festival. The season of the festival and the events of the festival are all recorded in picture-writings until the shaman becomes deft in picture language. The records which have been discovered among tribal men are usually called codices. They are recorded on various things, such as papyrus, fiber of the maguey plant, birch-bark, and the skins of animals; especially are calendars painted on the walls of temples.

These records made from time to time through century after century become very highly developed. When a concept is given a sign it becomes more and more conventionalized until its character as a picture is lost. In this stage a curious phenomenon is observed. An ideoglyph is read as a word instead of as a pictorial event. This is the stage in which Chinese writing is to be seen at present. Now, when a glyph is read as a word, the interesting phenomenon of which we have spoken is this: Words

have different meanings, the same word may express different concepts, and the glyph may be read by speaking the word and attaching to it any meaning which the spoken word represents. In this early society words are mysterious things supposed to be properties or qualities of things, rather than signs of things. When such glyphs become signs of spoken words they are signs of sounds. They become signs of word-sounds, then signs of syllabic sounds, and ultimately signs of alphabetic sounds; and thus picture-writing is developed into alphabetic writing.

In the higher civilization written language is founded on alphabets as spoken language is founded on sounds; but primitive written languages are not graphic signs designed to represent sounds. The languages thus produced in primitive time have distinct words as ideographs; they also have a distinct grammar for the arrangement of these glyphic words unlike that of highly developed written language. Etymologies also take a different course; thus, in the Chinese, the etymology of glyph words is highly complex and is upon a distinct and peculiar plan. The sematology of the language represents the culture of the people who employ such a written language. On the other hand, in fully developed written language alphabets represent sounds, while letters are arranged in words and the words in sentences. The etymologies of the written words correspond to the etymologies of the spoken words, while the sematologies of the written words also correspond to the sematologies of the spoken words.

LOGISTIC LANGUAGE

The fifth language of the series now requires characterization. In the earliest and best developed condition it is found as the language of enumeration. Here numbers are represented by graphic characters which have been called digits, because originally the fingers of the two hands were used as an abacus for counting, and the written numbers represented the fingers—the nine vertical strokes for nine fingers and a cross stroke for the

tenth. Ultimately the ten strokes were developed into ten figures which are still called digits; the tenth digit is called a cipher, and in order that it may be significant it must be read as ten times some other digit; thus one with the zero is read as ten, two with the zero is read as twenty, etc. A hundred is represented with a one and two ciphers, two hundred by a two and two ciphers. Hence units of different orders are recognized. A constant ratio exists between one order and its next higher, which is ten, because the original abacus for counting was the ten fingers. As this linguistic system had its beginning in a number system, we call it logistic speech. There have been developed many tables of measures for quantities of various kinds; thus there are the long-measure table, the square-measure table, the cubic-measure table, the dry-measure table, the liquid-measure table, various weight-measure tables, various time-measure tables, etc. These are all examples of logistic speech, which were developed out of ideographic writing into a language of more universal application.

The highest development of this language which yet exists is found in the science of mathematics, which has a plus sign, a minus sign, a multiplication sign, a division sign, an equality sign, a root sign, and many others;—we will not go on to enumerate them because they are many and so well known that the few will suggest them all. The science of astronomy has also developed an elaborate logistic language, the science of chemistry another, and the science of geography, the science of geology, the science of botany, and the science of zoölogy have all developed something of a logistic language. A logistic language is also developed in many of the arts; especially is music thus written.

The essential characteristic of logistic language is that its sematology is universal, so that the meaning of any character depends on the meaning assigned to it by the user—it is the special language of reasoning and avoids all ambiguities of other languages due to the multifarious meanings of single words. There is no source of error in reasoning which compares with the

fallacies of diverse meanings, but science constructs for itself a special language which obviates this evil.

The grammar of this language is yet unwritten, for the language has scarcely been developed to a sufficient extent for the purpose. It may be that when logic is wholly emancipated from metaphysic, logicians will devise a grammar of logistic language. Perhaps they will then call it the grammar of logic, and what I have called logistic language will be called logic. All that is valuable in the so-called logic will remain as component elements of a grammar—a grammar of the science of reasoning with language. Logic is the science of reasoning with language, and logistic language is the language of reasoning.

We have thus seen the nature of emotional language, oral language, gesture language, written language, and logistic language. The five fundamental sciences of Philology are thus briefly characterized, and the nature of Philology itself is set forth in its pentalogic elements, which I deem to be inclusive of all and severally exclusive of each other.

A TWO-FACED NAVAHO BLANKET

By WASHINGTON MATTHEWS

As the American Indians are generally believed to be neither imitative nor inventive, it is well to consider a remarkable instance of their aptness in learning, and, added thereto, an example of their inventive advancement.

The whole art of weaving among the Navahoes is worthy of close study for many reasons, but not least for a psychological reason. We have fair evidence from the early Spanish explorers that they knew nothing of loom-weaving three hundred years ago. The Navaho traditions (and the evidence of these is not without value) corroborate such statements. They tell us many times that the early Athapascan intruders in New Mexico and Arizona dressed themselves in rude mats or garments made of juniper bark, which must have been woven by the fingers without mechanical appliances. But we have also the evidence of travelers of a still earlier date that the sedentary Indians who were neighbors of the Navahoes used the loom and wove fabrics of cotton and other materials. We have archeological evidence that the Pueblos and Cliff-dwellers wove, with the assistance of a mechanism, webs of cotton, yucca-fiber, feathers, and hair, and that they knitted with wooden needles leggings of human hair; for this purpose, it is thought, they saved their combings.

Three hundred years ago, then, the Navahoes knew nothing of the loom; but in the meantime they have become a race of expert loom-weavers, and they have accomplished this without coercion or any such formal methods of instruction as we employ; they have "picked it up." True they have had their instructors near at hand — the sedentary Indians with whom they have

traded and intermarried,—but other wild tribes of the southwest had the same opportunities to learn and never profited by them. All had an equal chance to steal sheep from the Mexicans; but all did not become shepherds. The weaving of wool was, of course, unknown in America before the Spaniards introduced sheep in the sixteenth century; but the Indians were not obliged to change their old looms when the new staple was introduced.

Within the time to which I allude, not only have the Navahoes learned from their neighbors, the sedentary Indians, the art of weaving, but they have come to excel their teachers. Although blankets are woven in Zuñi today, if an inhabitant of that pueblo desires a specially fine serape, he purchases it from a Navaho.

While living in New Mexico during the years 1880-84, in daily contact with members of the Navaho tribe, I made a careful study of the Navaho art of weaving and wrote a treatise on the subject which appeared in the *Third Annual Report of the Bureau of Ethnology* (Washington, 1885). In that article I described all the important forms of Navaho blankets I had ever seen; but I had not seen a two-faced blanket, and, up to the date of writing, had not even heard of it; there is, therefore, no allusion to it in my treatise. I was absent from New Mexico, except during two short visits, for six years. Sometime after I returned to it, in 1890, for another sojourn of four years, I saw, for the first time, one of those two-faced blankets. Thus I may safely say that some time after I left New Mexico in 1884 the process of making this blanket was invented by a Navaho Indian, and probably, though not necessarily, by a Navaho woman.

During my second sojourn in New Mexico I tried to find a woman who wove this peculiar blanket in order that I might induce her by liberal pecuniary promises, as I had done on previous occasions with other weavers of special fabrics, to come to my residence and work under my observation; but I never succeeded. I was told that the blankets were made in a distant part of the Navaho country; my informants knew not where. If there were

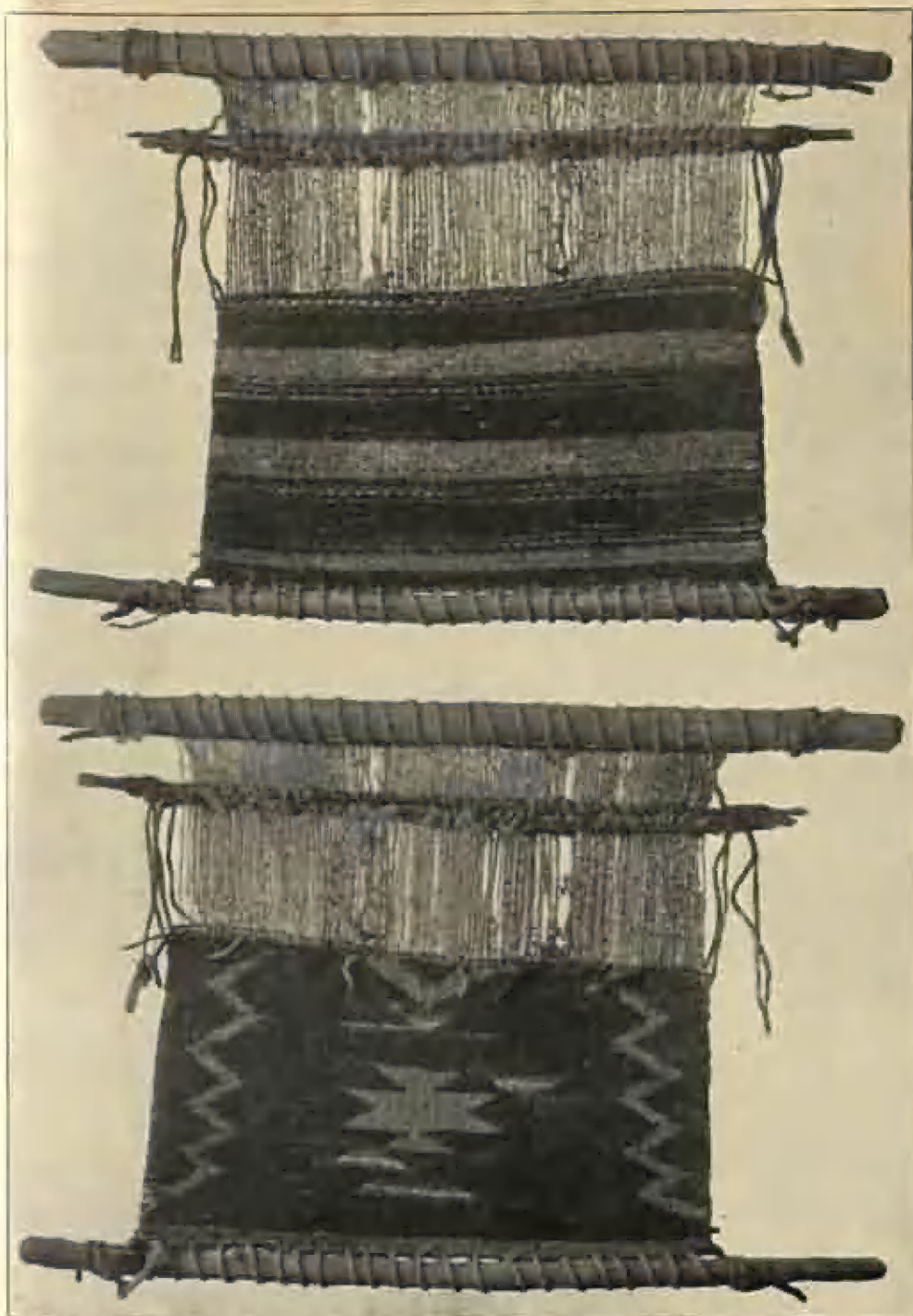
more than one maker, I never learned: but from what I know of the Navahoes I think it probable that the inventor has made no secret of the process and that now, at least, there are many weavers of the two-faced blanket.

Someone may question if this art did not exist during my first sojourn in the Navaho country previous to 1884, and if I might not have failed to observe it. This is by no means probable. Everyone in the Navaho country then believed that the distinguishing feature of the Indian blanket was that, no matter how richly figured, its two surfaces were always exactly alike in all respects. Mr Thomas V. Keam, of Keam's Cañon, Arizona, is the Indian trader who has been longest established among the Navahoes, and is their most popular trader; he has dealt and dwelt with them, I think, for about thirty years, and he is an educated, intelligent, and observant man. Had such blankets been even occasionally seen among these Indians prior to 1884, some of them would have been brought to him to trade and he would not have failed to observe their unusual appearance. In 1896 I wrote requesting Mr Keam to get for me a two-faced blanket from his part of the country and asking him what he knew of the origin of the new blanket. In his reply, dated January 27, 1897, he says:

As you suppose, it is only about three years since I first saw this work, and to date there are only a few who understand this weaving. The diamond or diagonal twill is undoubtedly copied by them from the Moki, but the double or reversible weaving I believe to be of their own [Navaho] invention, as I know of no other tribe that does such weaving.

Thus we see that it was not until about the year 1893 that the oldest trader in the Navaho land saw a two-faced blanket.

As I have said, the Navaho loom is a machine, and a rather elaborate machine too. The step from a tool to a machine marks a wide advance in human evolution. I have described accurately, in the paper already quoted, the mechanism of the



THE TWO SIDES OF A TWO-FACED NAVAHO BLANKET ON THE LOOM

Navaho loom (as it existed in the last decade, at least,) and have analyzed its component elements, which are essentially those of our own household loom. There is no doubt that the ordinary Navaho loom is an aboriginal invention which has not been modified since pre-Columbian days. In the weaving of belts, hairbands, and garters the Zuni women employ a harness or heald which seems to be derived from the Old World; but the Navaho heald is a rude, aboriginal device.

I cannot say what particular modification has been made in the loom (or perhaps I would better say in the application or management of the loom) to produce the new style of web, but it would greatly interest me to know. I trust that some of the many scientific explorers who have recently taken to visiting the Navaho land may find time to determine this and to describe it in technical terms. If the step from a tool to a machine is long, so is the step from one form or application of a machine to another which can produce such unusual results as we see in the specimen here illustrated (plate XXV).

Another thing worthy of note in this blanket is that we have here a diagonal cloth. There is considerable difference between the Navaho loom which produces this web and the machine which produces a plain surface. The difference is shown in the essay to which I have referred. As one might suppose, the loom that produces the twilled or diagonal surface is the more elaborate, and its manipulation requires the greater skill and care. This specimen shows that it is the more elaborate loom which the inventor has seen fit to modify for the new form.

But the specimen illustrated is not only a blanket partly woven; it is a loom, and a nearly complete loom, lacking only two movable parts (reed-fork and batten) which are common to all looms. Where is the secret, then? Why may not I, by merely examining the loom, tell how the change is made? I answer that I cannot do so without seeing the mechanism in operation. I might invent a plausible explanation and deliver

it with an air of certainty which would impress you as the truth and yet be far astray. I should have to see the weaver at work and even then might find it difficult to analyze the process. This I know from experience. There are writers who can reconstruct looms and processes by merely examining the webs or the impressions left by these webs on plastic clay; but unfortunately this is beyond my ability.

I know of no fabric made by civilized man that is quite like this. I have asked experts in the dry-goods line if they knew of any and have been told that they did not. The modern golf-cloth, which is perfectly plain on one side and figured on the other, is somewhat similar in character, but not quite. I have no doubt that, were such an end desired, the American inventor would have little difficulty in producing a loom that would weave a two-faced fabric; but so far he has not done so. I merely mention these facts to show that the Navaho inventor has received no suggestion from either a European fabric or a civilized artisan.

There are baskets made by certain Indians of the Pacific coast in which the figures woven on the outside are quite different from those woven directly behind them on the inside. They are two-faced fabrics, but the work is done altogether by hand and so offers little comparison with the Navaho blanket-work which is done by machinery. I have never seen any of these two-faced baskets among the Navahoes, and am certain they do not know how to make them; but I cannot deny that they may have seen them and have obtained at least an art suggestion from them.

PHILIPPINE GAMES

By STEWART CULIN

The games described in the following account are entirely those in which implements are employed, the paper being based on information furnished by Mr Alexander R. Webb, United States Consul at Manila (1892), in connection with a collection of ethnological objects which he made for the United States National Museum. The objects appear to have been obtained in Manila. From their names and descriptions it is possible to classify them approximately with reference to their origin as Spanish, Chinese, Malay, and Hindu.

1. *Pungitan* (cat. No. 165421, U. S. National Museum).—A game of shooting with a shell at a small shell placed in a ring; it is usually played on the ground.

In the rural districts and mountains the ring is drawn upon the floor of the native house, and sometimes upon a board made for the purpose. The ring is about two feet in diameter, and has a small circle, about an inch in diameter, drawn in the center (figure 63).

Each player has a small white shell which he twirls in the air between his thumb and forefinger to determine who shall shoot first. If one falls mouth up and the other mouth down, the holder of the former takes the first play. If both fall alike, they are twirled again. The first player places his shell on the line of the large circle at

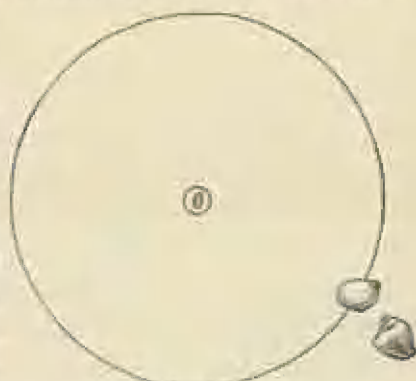


FIG. 63.—The *pungitan* game. (Diameter of circle about 2 feet.)

any point, and, with a quick, dexterous flip of the thumb and forefinger, shoots it at the small shell placed in the inner ring. If he succeeds in knocking it out of the large circle, he wins whatever has been staked; if he fails, the small shell is replaced and the opponent shoots. The bets are usually from one to five coppers, or fish, fruit, cigarettes, or similar common articles.

2. *Tablita* (cat. No. 154197, U. S. N. M.).—A diagram of twenty-six squares (figure 64) is drawn on the ground, or a paste-

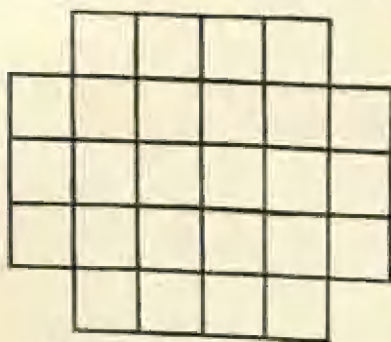


FIG. 64.—Diagram of board for *tablita*.

board or wooden board is sometimes used. A string or strip of bamboo or rattan is stretched about three feet above, over the middle of the diagram; two players seat themselves on the ground, and each one throws a copper disk as high as or over the string. If the disk falls on a line, the player loses; but if it falls within a square he wins.

If the disk of each player falls within a square, the one farther from the line wins. The players bet usually from three to five coppers, and the winner takes the pool. *Tablita* is played in all parts of the country, but is seldom seen in the market-places.

3. *Cara-cruz*, "Face-cross" (cat. No. 154196, U. S. N. M.).—This is a game of heads-and-tails. The dealer has a cardboard, with a division line through the center, marked on one side "Cara" and on the other "Cruz" (figure 65). The player places his bet of one or more coppers on either side of the square, and the dealer throws two coppers from a piece of leather into the air, so that they will fall and rebound from a small clay disk about two and a half inches in diameter and an inch in thickness. If either copper remains on the disk it is called a false play. If the play is fair and the two coppers fall with face or cross up, the player who has bet on the corresponding square wins double his

bet. If they fall one face and one cross up, the dealer takes all the money on the board. The game is in favor among boys and

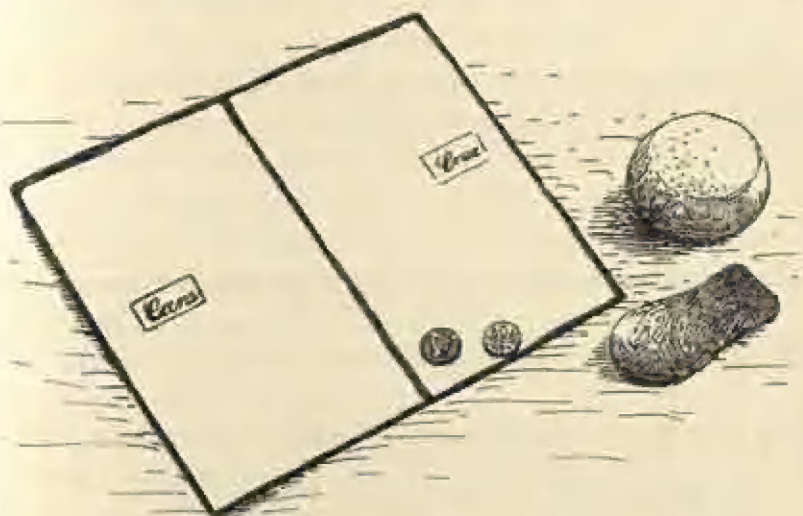


FIG. 65.—Implements for *cara-cruz*. (Length of board 12½ inches.)

women. It receives its name from the devices on the obverse and reverse of Spanish coins.

4. *Birachapa* (cat. No. 165423, U. S. N. M.).— This is another

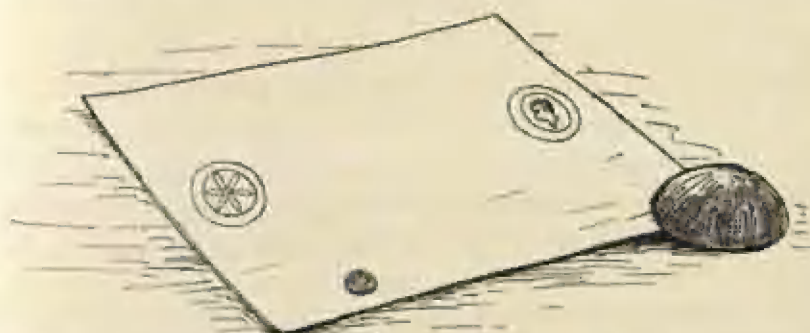


FIG. 66.—Implements for *birachapa*. (Length of board 14½ inches.)

game of heads-and-tails: The dealer twirls or spins a coin with his thumb and forefinger, and, while it is spinning, claps a cocoanut-

shell over it. The players bet as many coppers as they please on the head or the tail, laying them upon a wooden tablet with the figure of the head of a coin on the right side and the device representing the tail on the left (figure 66). The dealer pays copper for copper. The coin spun is a *cuarto*, and is worth five-eighths of a cent. The common copper coin is *dos* (two) *cuartos*. The *cuarto* is rarely used in trade, the *dos cuartos* being the lowest current coin.

5. *Prinola* (cat. No. 154193, U. S. N. M.).—This game is played with a hexagonal top die, with a wooden pin, marked with incised circles from one to six, which are arranged with one opposite two, three opposite six, and four opposite five. This top

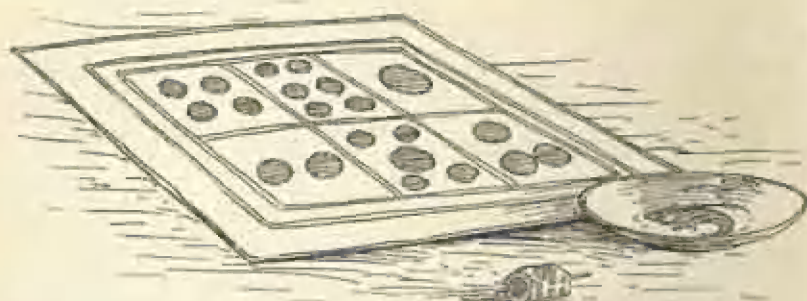


FIG. 67.—Implements for *prinola*.

is spun in a saucer (figure 67). The stakes are laid on a card with six divisions, marked with disks of red paper from one to six. Mr Webb states that *prinola* is a popular game in the market-places and is particularly favored by native women. Bets are placed on the spots on the card; the top is spun rapidly in the saucer, and the winners are paid double the amount of their bets. The chances are largely in favor of the dealer.

A game identical with *prinola* is played in southern China with a tectotum (*ch'ê m'ê*), the stakes being laid in the same manner upon a numbered diagram. In India a similar six-sided tectotum (*chukrer*) is used, and the stakes are laid upon a board with six

partitions. As before remarked by the present writer¹ the name *prinola* is evidently the Portuguese *pirinola*, but the game itself is doubtless of East Indian or Chinese origin.

6. *Puti-pula-itim* (cat. No. 154192, U. S. N. M.).—A dice game played with two cubical wooden dice, each marked with a single dot on each face, two red, two black, and two white, those of the same color opposite. The players lay their stakes on a cardboard with three divisions—one with a blue spot, one with a red spot,

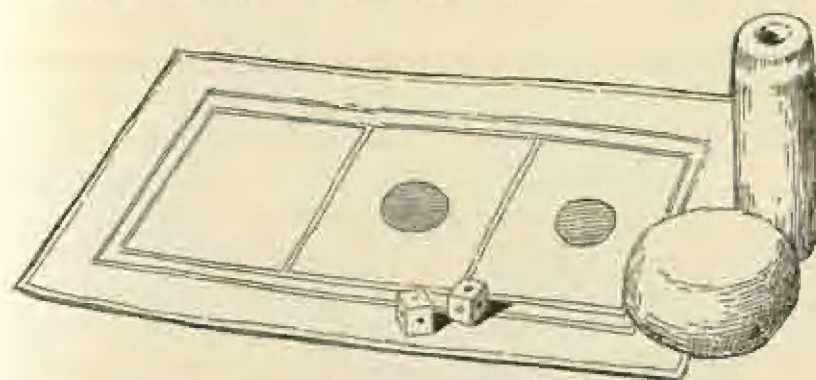


FIG. 68.—Implements for *puti-pula-itim*. (Length of board 12½ inches.)

and the third blank (figure 68),—putting one or two coppers on whichever they select. The dealer then throws the two dice from a small bamboo box upon a disk of baked clay about two and a half inches in diameter, the same as that employed in *cara-cruz* (No. 3). This disk is used to give the dice greater rolling tendency, and the throw does not count if one of them remains on it—both must roll off to make the play effective. If one die turns up the color played on, the player receives two coppers for each copper bet. If both dice turn up the color bet on, he receives four coppers.

This is a popular gambling game among the natives living in the towns and villages, and groups of both sexes, many of whom

¹ Chinese Games with Dice and Dominoes, *Report U. S. N. M.* for 1893; Washington, 1895, p. 496.

are professional beggars, may be seen in the market-places, at any hour of the day, betting away their scanty alms.

7. *Tapatan* (cat. No. 154190, U. S. N. M.).—This game is played by two persons on a square diagram, divided into eight equal parts. Each player has three men, consisting of pebbles, or of pieces of bark or wood. The dark plays first by placing one of his pebbles in the center of the diagram where the lines intersect, or where one of the cross-lines touches the line of the square. The object of the game is to get three pebbles of the same color on a line in any direction. When all the pebbles are on the board, each player moves in turn. Diagrams for this game are frequently seen marked on the floors and doorsteps of



FIG. 69.—Board for *tapatan*. (10½ inches square.)

native houses. The board collected by Mr Webb (shown in the accompanying figure 69) consists of a tablet of hardwood, 10½ inches square, and is accompanied with six round pieces of wood, three white and three dark. Many families, says the collector, have boards and pieces like them; he also states that *tapatan* is played by the natives at all times and places when they have money with which to gamble. The game has the advantage of requiring no paraphernalia that cannot be picked up on the roadside. In southern China an identical game is played under the name of *luk tsut ki*, "six man chess."

8. *Dama*, Draughts (cat. No. 154194, U. S. N. M.).—The board consists of a small wooden table, 10½ by 11 inches square, inscribed with a diagram as shown in figure 70. Mr Webb states that the board is not necessary, the diagram being drawn upon the ground, a table, or the doorstep or floor of a house. The pieces, or men, twenty-four in number, twelve on a side, which are placed at the intersection of the lines as shown, consist of small sections of bamboo, half being colored red on both sides to distinguish them. The usual pieces are stones or colored tiles.

The moves are the same as in ordinary draughts, except that a king has the power of passing over any number of squares in a straight line, taking all the men in its way. It cannot cross a

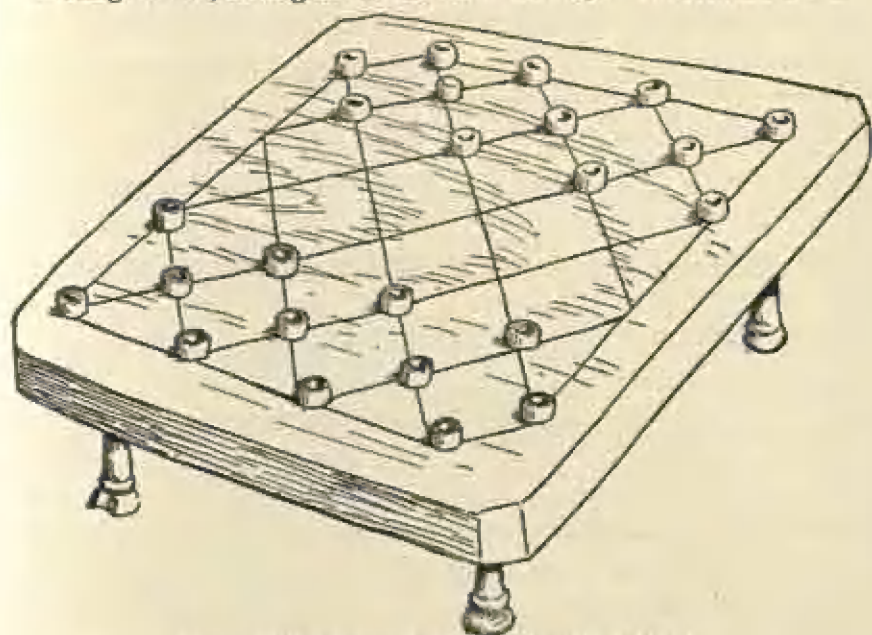


FIG. 70.—Table for *dama* or draughts. (Size 10½ by 11 inches.)

square, however, nor can it return on another line until after the opponent has made another move. The game agrees in the king's move with the game of Polish draughts, and also with the game of draughts played in the Hawaiian islands under the name of *moo*.¹

9. *Capona* (cat. No. 154191, U. S. N. M.).—This game consists of counting off small shells in fours and betting on the remainder. The implements of the game consist of about seventy-five shells (*Umbonium vestiarium* Linn.), a small china teacup, a piece of wood or a stick of cardboard marked with the numbers 1, 2, 3, 4, and a curved slip of bamboo, twelve inches in length (figure 71). The native marks the numbers on the ground by the wayside, and with his cup of shells by his side and his

¹ See Hawaiian Games, *American Anthropologist*, N. S., vol. 1, p. 244.

bamboo hook in his hand awaits his customers. The player lays his coppers on one of the four numbers, and the dealer, or banker, empties the shells upon the ground, covers them with the cup, and divides them into two unequal piles, allowing the player to



FIG. 71.—Implements for *cayena*. (Length of board 10 inches.)

select either pile. This done, the dealer counts off the pile selected in groups of fours, using the hooked stick for the purpose to avoid the suspicion of a false count. If the remainder agrees with the number bet on, Mr Webb says, the player receives the amount of his bet, otherwise he loses. Bets are limited generally to five coppers—equivalent to about six and a quarter cents of our currency. As the odds are three to one against the player, he should receive three times the amount of his stake when the number bet on remains.

This game is identical with the Chinese game of *fán t'án*, in which Chinese coins or glass buttons are counted off from under a specially made brass cup with a straight rod of black wood, or, as the writer has seen among the Chinese in the United States, with a curved piece of bamboo identical with that used in the Philippine game.

10. *Ripa* (cat. No. 154198, U. S. N. M.).—A lottery played with twenty cards, each having two figures, forty wooden hemispheres having figures corresponding with the cards, and a bottle-

shape bamboo wicker basket (figure 72). The cards in the game collected by Mr Webb measure $1\frac{1}{2}$ by 2 inches, have uniform backs with blue-dotted card paper, and are made of Spanish playing cards cut to size and having white paper pasted over the



FIG. 22.—Implements for *rika*. (Height of bottle 8 inches.)

faces, on these are pasted two small disks of paper, inscribed by hand, each with the conventionalized suit-marks of two of the Spanish playing cards. The pack from which they were taken is the Spanish pack of forty cards in which the eights, nines, and tens are suppressed. Each of the wooden hemispheres, three quarters of an inch in diameter, has a corresponding disk bearing the device of one of the forty cards pasted upon its face. The cards are sold to the players for one copper (one and a quar-

ter American cents). The bottle is shaken and one of the hemispheres is thrown out upon the ground or table, and is taken up by the holder of the card bearing the corresponding figure. The player who first receives two hemispheres bearing the figures corresponding with those on his card, takes the pool of twenty coppers, or less, according to the number of cards sold, paying the dealer one copper as his percentage or commission.

Mr Webb states that so far as he could learn at the time the collection was made, the game had been played in the various cities of the archipelago for fifty years or more. It is rarely played in the rural districts or small cities, but is in favor where the better class of natives congregate. There are small thatched sheds in every city and town, where it is played nightly—formerly, at least, under license of the government. The game is very attractive to cooks and house servants, as it seems to promise large gains on a small investment.

11. *Chabiqui*¹ (cat. No. 165422, U. S. N. M.).—This is a sort of lottery, played with a wooden tablet with painted numbers from

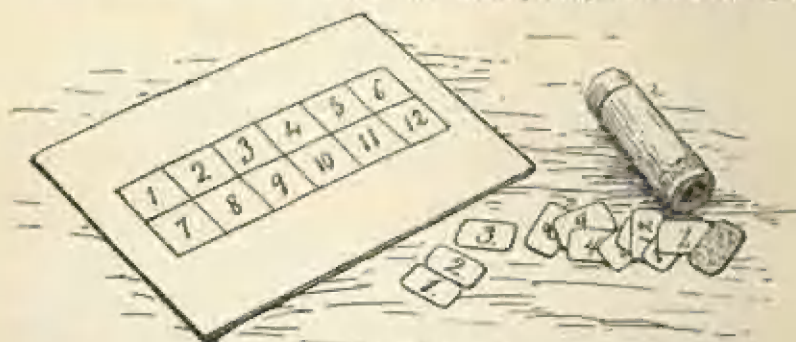


FIG. 73.—Implements for *chabiqui*. (Length of board 12 inches.)

1 to 12, and a corresponding number of numbered cards (figure 73). The dealer takes one of these cards from the pack (after shuffling

¹ See The Game of Chap-ji ki, by G. T. Hare, in *Journal of the Straits Branch of the Royal Asiatic Society*, No. 32, July, 1898, p. 63. The name is here explained meaning "twelve cards", *chap-ji* being "twelve", and the word *ki* merely a Chinese numerical classifier for the term "card".

them well and covering his hands with his hat or handkerchief while taking the card) and places it in a small stoppered bamboo box. Each player chooses a number on the board on which he places a copper. The bets all being made, the dealer opens the box and throws the card on the board, and the player who has bet on the corresponding number receives ten coppers besides the one he has bet. When the board is not full and the number thrown out of the box corresponds to one of the uncovered ones, the dealer takes all the coppers on the board; but the game is seldom played with any uncovered numbers. The cards collected by Mr Webb are made of cut Spanish cards, with the faces pasted over in the same manner as are those used in *ripa*.

12. *Chungcajon, Mancala* (cat. No. 165422, U. S. N. M.).— Played with a boat-shape board with fourteen holes in two rows



FIG. 74.—Board for chungcajon (mancala). (Length 14 inches.)

and a large hole at each end (figure 74). Ninety-eight shells (of the same variety as those used in the game of *capona*) are employed, which, at the opening of the game, are evenly distributed in the fourteen cavities, seven in each. The two players sit on opposite sides of the board; either may begin, as may be agreed on. The first player takes the shells from any one of the holes in the row nearest to him and drops one in each hole, passing to the left, and also in the large hole at the left end, but not in the large one at the right, which is the depository of his opponent. When he has dropped the seven shells, he takes the shells from the cavity in which he dropped the last one. He continues in this way until he has dropped his last shell into his end cavity. Both players continue alternately until all the shells in the small

cavities are exhausted, when the player having the larger number of shells in his home is the winner.

As before described by the writer, this game is widely distributed through Asia and Africa where Arab influences have penetrated. In Ceylon it is called *chanca*, and at Johore, Straits Settlements, *chongkak*. The arrangement of the board in both cases is the same as in the Philippine game.¹

13. *Billar de barimbao* (cat. No. 165420, U. S. N. M.).—Figure 75 shows a model of a table for a game resembling the European

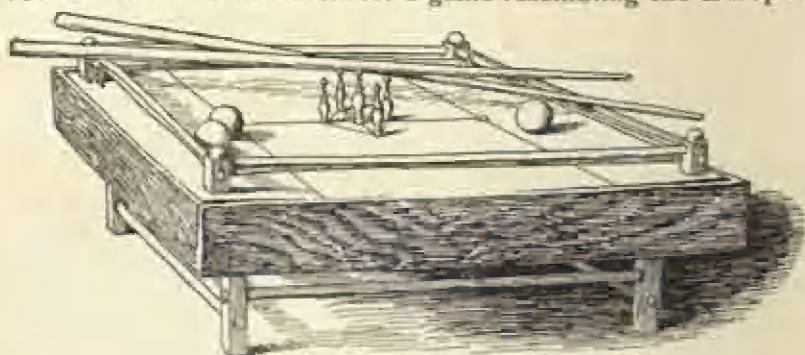


FIG. 75.—Table for *billar de barimbao*.

game of billiards (*billar*). Mr Webb states that nearly all the pin-pool tables in use are built by natives and Chinese after the European pattern, but with wooden instead of stone beds; vegetable ivory and wooden balls are also used. The old billiard or pin-pool table was constructed after this model, without the beds being covered with cloth, and without pockets; it was four feet long. The manner of playing is as follows: The small pins count four each, and the larger one, which is placed in the middle, counts five, making the game twenty-one. The leader plays on the spot-ball from the lower end of the table, and counts only when the spot-ball knocks down the pins; if he gets one or more pins on the first shot, he continues to play until he misses, or until all the pins are down. Each player puts up the amount

¹ See Mancala, the National Game of Africa, *Report U. S. N. M.* for 1894; Washington, 1896, p. 509.

to be played for, and the one who first makes exactly twenty-one wins the pool. If he makes more than that number, he must begin over, and loses the points already made; but he is still allowed to play on, without putting up more money, until someone wins.

Before billiard tables were introduced, the game was known as *barimbao*, but when European paraphernalia made their appearance it was changed to *billar de barimbao*, to distinguish it from the regular *billar*.

14. Football (cat. No. 152799, U. S. N. M.).—Football is played with a rattan ball three and three-quarters inches in diameter (figure 76). It is identical with the football of Siam, Java, Borneo, and the Malay peninsula.

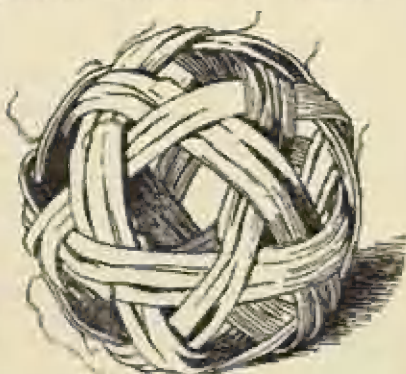


FIG. 76.—Rattan football. (Diameter $3\frac{3}{4}$ inches.)

15. *Lan-se* (cat. No. 165419, U. S. N. M.).—A puzzle made of a flat slip of bamboo, thirteen and a half inches in length, with a lateral rectangular orifice across which a cord is tied, passing

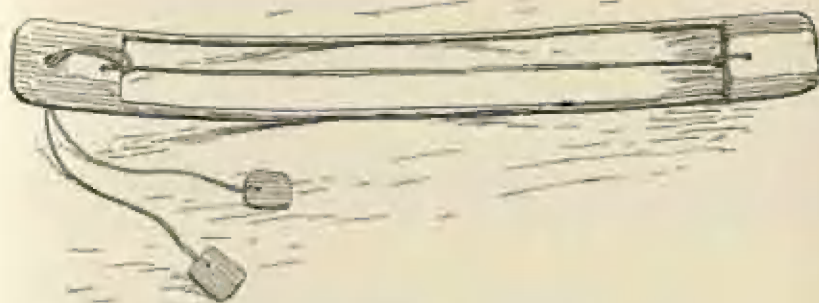


FIG. 77.—The *lan-se* puzzle. (Length $13\frac{1}{2}$ inches.)

through holes in each end. Another cord passes around this cord and through a hole in the bamboo beyond, terminating in

two rectangular pieces of bamboo (figure 77). The object of the puzzle is to remove the second cord.

16. Puzzle (cat. No. 154198, U. S. N. M.). — This consists of a bar of bamboo, eighteen and a quarter inches in length, with a hole burned at each end and one in the middle (figure 78). A



FIG. 78.—Bamboo bead puzzle. (Length 18¼ inches.)

cord is fastened to one end, passes as a slip-noose through the central hole, and is attached to the other end. The object of the puzzle is to remove the seven bamboo beads which are strung upon this cord.

A modern puzzle of like form from Saharanpore, India, as well as similar puzzles from Indians of Guiana and from the Hawaiian islands are contained in the writer's collection.

TRAPS OF THE AMERINDS—A STUDY IN PSYCHOLOGY AND INVENTION

By OTIS T. MASON

That unicorns may be betrayed with trees,
And bears with glasses, elephants with holes,
Lions with toils and men with flatteries, . . .

Let me work ;

For I can give his humor the true bent,
And I will bring him to the Capitol.

Julius Caesar, II, 1.

MEANING OF THE TERM AMERIND

America, in this connection, embraces all of the Western Hemisphere visited by the native tribes in their activities associated with the animal kingdom. It might be allowed to exclude a small number of frozen or elevated or desert regions untrodden by human feet, were it not for the fact that most of these were the favorite resorts of zoömorphic gods and all creatures of the aboriginal imagination. Most certainly the name America must in this study include those oceanic meadows or feeding grounds, stretching out from the continents often more than a hundred miles, whereon were born and nourished innumerable creatures, vertebrate and invertebrate, which dominated the activities of the littoral tribes, penetrating far inland, and carrying back in the shape of live animals, including fish, birds, and mammals, the by-products of terrestrial activities.

Amerind, or Amerindian, is merely an abbreviation of the phrase "American Indian", which has fastened itself on our literature despite the errors which it involves.

DEFINITION OF THE TERM TRAP

A trap is an invention for the purpose of inducing animals to commit incarceration, self-arrest, or suicide. In the simplest

traps the automatism is solely on the part of the animal, but in the highest forms automatic action of the most delicate sort is seen in the traps themselves, involving the harnessing of some natural force, current, weight, spring, and so on, to do man's work.

The climax of invention in any direction is automatic action. The human hand comes first as efficient in human work, and its own movements are supplemented and intensified by devices, but gradually it withdraws itself, its activities being at last performed by apparatus which function in its absence.

These assertions hold true in the devices for capturing animals, which in their simplest forms are merely taking them with the hand just as in gathering fruits. By a second step they are harvested with devices—scoop-nets, dippers, seines, hooks that are substitutes for the crooked finger, reatas, dalls, bolas, and many more. A third step leads to active slaughter with clubs for bruising, knives and axes for cutting and hacking, and with a thousand and one implements for piercing and retrieving. In these the hunters are present and active, making war on the animal.

In the matter of automatism there is no great gulf between the trapper and the hunter. At both ends and in the middle of the trap's activity the man may be present, but not to the victim. Not waiting for the victim to go to its doom of its own will, the hunter, having set his trap, proceeds to entice and compel the game; he has learned to imitate to perfection the noises of birds and beasts—it may be of those he is hunting, of others hunted by them or their enemies;—he knows the smells that are agreeable and the dainty foods most liked; on the contrary he also knows how to allay suspicions in one direction, to arouse them in another,—always with the trap in his mind.

The action of the trap itself is also frequently assisted by the hunter out of sight. He releases the pent-up force of gravity, of elasticity.

Finally, the result of the trap's action is to hand the victim

over to the hunter to carry away or to kill. Often the trap does the killing outright, and the result is raw material for the elaborative industries; but in other cases the hunter must be near by to give the *coup de grâce*: the instances are many where the victim must be dispatched at once, or the trap will be destroyed and the result lost.

THE TRAP AS AN INVENTION

As intimated, the trap teaches the whole lesson of invention: At first it is something that the animal unwittingly treads on (Middle Low German, *treppen*, to tread; tramp is a kindred word) in its tramps and walks or falls into durance; at last it is a combination of movement and obstruction, of release and execution, which vies in delicacy with the most destructive weapons. Gravity and elasticity are harnessed by ingenious mechanical combinations. It is possible to trace the new and useful additions in each class, which in the Patent Office would be called inventions. To follow these in savagery and barbarism, before there were monopolies and patents, is an interesting contribution to the history of empiricism.

THE TERM PSYCHOLOGY

In this paper the term psychology stands for all those mental processes that are caused and developed by trapping. There is the mental activity of the animal and that of the man; the trap itself is an invention in which are embodied most careful studies in animal mentation and habits—the hunter must know for each species its food, its likes and dislikes, its weaknesses and foibles. A trap in this connection is an ambuscade, a deceit, a temptation, an irresistible allurement; it is strategy. Inasmuch as each species has its own idiosyncrasies, and as the number of species was unlimited, the pedagogic influence of this class of inventions must have been exalting to a high degree for the primitive tribes.

The variety of execution to be done by the trap, irrespective of the species of animals, was very great. It had to inclose or

impound or encage, or to seize by the head, horns, limbs, gills; to maim, wound, crush, slash, brain, impale, poison, and so on, as though it had reason—that is, the thought of the hunter had to be locked up in its parts ready to spring into efficiency at a touch. As population increased, wants became more varied and animals made themselves more scarce. They also became more intellectual and wary. If any reader of this may himself have been a trapper he will remember the scrupulous care with which he proceeded at every point—to make the parts stable or unstable, to choose out of innumerable places one that to a careful weighing of a thousand indications seemed best, to set the trap in the fittest manner, and at last to cover his tracks so that the most wary creature would not have the slightest suspicion.

The Amerind knew that the beaver makes for deep water when caught, so he fastened to the trap a heavy stone which held the creature under until it was drowned; he knew also that the beaver would amputate its own leg when it found itself seized, so he must provide for that. The beaver's objection to the smell of anything human is also strong, so the most aromatic substances have to be mixed with castor to sink the weaker into the stronger scent. The savages making a coöperative onslaught upon a village of beaver anticipated their plunging into the stream by rows of stakes driven close together, and killed the beaver while trying to make their escape. To catch a fox it was necessary to win its confidence, and this the savage knew; so he prepared a trap that was perfectly harmless, and let Reynard walk about over the ashes or fresh earth or chaff, picking up dainty bits, until all suspicion was removed. Then was the time to conceal the trap; but all vestiges of human hand or foot must be removed, and the apparatus must be cleaned and smoked most effectually.

PARTS OF TRAPS

The trap, like all other inventions, has classes of parts, namely, the working part, and the mechanical, manual, animal part. The

victim finds itself in a pound, deadfall, cage, hole, box, toil, noose, or jaw, on a hook, gorge, pale, or knife, and so on. This dangerous element, to repeat, may not need any accessories. The fish swims into a fyke, the animal walks into a pit or pound, the bird or climbing animal finds itself in a cage with racheted entrance to prevent egress; that is all.

In a higher stage of invention, where the forces of gravity and elasticity are invoked to do the incarceration, arrest, or execution, there has to be found between the lure and the execution a host of devices, and these form an ascending series of complexities. The simplest of these intermediary inventions is an unstable prop or support of some kind; the slightest pull at a bait removes the ticklish thing, and weight or noose or other deadly part is set free. The trigger and the catch are more complicated and varied; the secret of them all, however, is that an unstable catch is released by the animal in passing, in prying curiosity, or in rubbing; this is connected by means of sticks and strings to the last release, since the operation of releasing is in connection with the device in which the force is confined and by which the work is to be done. In the highest forms of weight-traps and spring-traps there are veritable machines, since they change the direction and the effect of motion. It is on these that most ingenuity has been expended, and in them is exhibited that wonderful threefold play of working force, work to be done, and processes of reaching the end. Variations in the materials utilized will play no mean part also in a continent covering all zones save the antarctic, all elevations at which man can live, and all varieties of vegetal phenomena growing out of temperature and rainfall. To proceed with some order it will be necessary to divide the Western Hemisphere into convenient culture-areas; the following will serve for a provisional list:

Amerind Culture-areas

<i>Areas</i>	<i>Peoples</i>
1 Arctic	Eskimo
2 Canadian	Athapascan
3 Atlantic slope	Algonquian-Iroquois
4 Mississippi valley	Siouan
5 Louisiana or Gulf	Muskogean
6 Southeastern Alaska	Haida-Koluschan
7 Columbian region	Salish-Chinookan
8 Interior basin	Shoshonean
9 California region	Very mixed stocks
10 Pueblo region	Tanoan-Tewan and Sonoran
11 Middle American	Nahua-Mayan
12 Cordilleran region	Chibcha-Kechuan
13 Antillean region	Arawak-Caribbean
14 Upper Amazonian region	Jivaro, Peba, Puno, etc.
15 Eastern Brazilian region	Tupi-Guarani, Tapuya
16 Mato Grosso and southward	Mixed people of Brazilian and Andean types
17 Argentina-Patagonian region	Chaco, Pampean, and Patagonian stocks
18 Fuegian region	Aliculuf, Ona, and Yahgan

The inquiry will not be raised here whether the traps not made of metal and found in the hands of the American savages are entirely aboriginal or whether there has been acculturation. A good knowledge of the traps as they exist or existed will go far toward settling the question of origin.

CLASSIFICATION OF TRAPS

Traps are variously classified according to the concept in the student's mind. If it be the natural element in which they work, there will be—

Land traps for mammals, birds, reptiles, and invertebrates.

Water traps for mammals, birds, reptiles, fishes, and invertebrates.

Air traps for birds and insects.

With reference to their parts, either mechanical or efficient, there are a multitude of names which will appear in a separate

vocabulary. In the setting they are man-set, self-set, ever-set, and victim-set.

For the purposes of this paper traps may be divided into three groups, namely, (A) inclosing, (B) arresting, (C) killing. In each of these we may begin with the simpler forms—those with the least mechanism—and end with those that are more intricate.

A. INCLOSING TRAPS

- (a) Pen—dam, pound, fyke.
- (b) Cage—coop, pocket, cone, fish-trap.
- (c) Pit—pitfalls.
- (d) Door—with trigger, fall-cage or fall-door.

B. ARRESTING TRAPS

- (e) Mesh—gill, toils, ratchet.
- (f) Set-hook—set-line, gorge, trawl.
- (g) Noose—snare, springe, fall-snare, trawl-snare.
- (h) Clutch—bird-lime, mechanical jaws.

C. KILLING TRAPS

- (i) Weight—fall, deadfall.
- (k) Point—impaling, stomach, missile.
- (l) Edge—wolf-knife, braining-knife.

A. INCLOSING TRAPS

Inclosing traps are those which imprison the victim, most of them without doing any further bodily harm, though there may be added to these some other devices which will injure or kill. There are four kinds of inclosing traps: (a) pen-traps, (b) cage-traps, (c) pit-traps, (d) door-traps.

(a) *Pen-traps*.—These include pounds or corrals on land, and dams, fish-pens, and fykes in the water, the idea being simply to inclose. Traps of this sort have no tops and therefore are not useful for birds. In connection with other forms, small inclosures of this kind are used to surround the bait and to guide the victim in a certain direction. The pen or pound is like a farmyard—it is an inclosure in which animals are shut. How the animal gets in, how it is kept in, and what is done to it afterward will

decide whether the pound is a trap or a corral, or whether it is a reservoir, an abattoir, or a domesticating device. The simplest form of pound is of brush or reeds and confines whatever enters, large or small; but the perfected form, in whatever element it is erected, has interstices carefully adapted to retain certain species and to allow others to escape, or holds the adult individual in and lets the small and young out. The savage tribes understood this process well and, further, could make movable walls of reeds and long nets; indeed, the great impounding nets are the last word in the series. There is a vast deal of natural history and learning in them: they are on land or in the water; above water-level or submerged; in still water or in running water; facing the current or with the current; mouth upward or mouth downward; man-closed, self-closed, or victim-closed,—all the result of good intellectual exercise. Add to the pound an entrance, and there begins another set of inventions around the notion of shutting. A gateway or an entrance may be closed by nature or by device: the tide falls and leaves aquatic creatures imprisoned; animals get under some obstacle and cannot surmount it—they corral themselves. A gateway may be guarded by sentinels also; but gates may be intentionally shut, or a pound-shaped barrier be set up so that the return of those which pass in is impossible. Most pounds, whether in water or on land, have some natural or artificial lane for conducting the game to the gateway. On either side may be precipices, trees with ropes or wattles between wing-nets, or something of the kind along which animals pursue their natural course and are lured or driven to the pen.

(b) *Cage-traps*.—In this class must be grouped all forms of coops and strong house-traps on land, and a great variety of cones, pockets, and fish-traps in the waters: all of these are designed for climbing, flying, or swimming creatures. The cage- or coop-trap, completely inclosed on every side, is a step in advance of an open pen, whether on land or in the water. The

majority of cage-traps have funnel-shaped entrances, into which the animal passes easily and unrestrained, but exit is prevented by means of a pointed strip of wood or other substance acting as a ratchet; or, in the case of nets, the small end of the funnel consists of a series of string gates, which the animal passes, and these close the mouth of the net so as to prevent escape.

Among the Eskimo a unique contrivance for catching foxes was a net which was made to be set around a burrow. Stakes were driven into the snow to support the net, which was about five feet high; in the corners were long pockets, opening wide into the net but gradually contracting until the fox could go no farther; endeavoring to turn back, it became hopelessly entangled and died of fright and cold.

(c) *Pits*.—The digging of pits was not common in America before the discovery, owing to the lack of metallic excavating tools. Pits partially dug out and partially built up were seen here and there as a blind for the hunter, who concealed himself therein. Boas, quoting Lyon, describes an Eskimo fox-trap in the snow into which the animal jumped and was unable to extricate itself; it was like a small lime-kiln in form, having a hole near the top in which the bait was placed; the foxes were obliged to advance over a piece of whalebone which bent beneath their weight and let them into the prison.

The central Eskimo, according to the same authority, dig a wolf-trap in the snow and cover it with a slab of snow on which the bait is laid; the wolf breaks through the roof, and as the bottom of the pit is too narrow to afford him jumping room, he is caught.

The Cree in the Saskatchewan country place at the end of their deer-drives a log of wood, and on the inner side make an excavation sufficiently deep to prevent the animal from leaping back.

Pitfalls are said to have been used by the Indians of Massachusetts. They are described as oval in shape, three rods long and fifteen feet deep.

The Concow Indians of California are said to catch grasshoppers for food by driving them into pits. The Achomawi, or Pit River Indians, dug deer pitfalls, ten or twelve feet deep, by means of sticks, and carried the earth away in baskets. In southern Brazil, also, wild beasts were caught in pits dug for that purpose and covered with leaves.

(d) *Door-traps*.—The last form of inclosing trap to be mentioned here is also the most mechanical; it includes those in which a gate or door falls and incloses the whole of the animal, or in which a cage, one side of which is held up by an unstable prop, falls and incloses the victim.

Among inventions of capture in which the operator is present, the inclosing trap resembles the inclosing net or seine.

Parry describes a small house-trap, made of ice and used by the Eskimo for foxes, at one end of which was a door made of the same material to slide up and down in a groove. This door was sustained by a line which passed over the roof and was caught inside on a hook of ice by means of a loose grommet to which the bait was fastened. The fox, pulling at the bait, released the door of ice and found itself in prison.

Crantz describes a house-trap, used by the Greenlanders, in which a broad stone forms the movable door. I have seen a trap of similar mechanism, used by folk in eastern United States, in which a cage or basket is propped up with a loop of splint; this, pulled inside by the animal tugging at the bait, brings down the cage upon the victim. Doubtless this form of imprisoning animals designed to be taken alive was quite well spread over the continent.

B. ARRESTING TRAPS

The arresting traps are designed to seize the victim by the neck or gills or feet, resulting in death but not killing it outright.

(e) *Mesh nets*.—The mesh net is based on the fact that birds, beasts, and fishes, by the conformation of their bodies or by the set of the hair, feathers, or gills, may ratchet themselves; that is,

they can move in one direction into the net, but cannot withdraw themselves. To this class belong "toils" for land animals, trammels and gill nets for aquatic animals.

Among the archeologic treasures of our National Museum are many net-sinkers, which would lead us to the conclusion that netting is an old art among the aborigines. The great majority of meshing devices are for aquatic animals, but tribes on the coast of British Columbia suspend long nets between long poles in order to capture migratory geese and ducks. The Eskimo make nets of sinew, of rawhide, and of baleen; these nets are set across the rivers in the open water, but more ingeniously under the ice by means of holes cut at such distances apart as to enable the fishermen to draw the net out and in by means of a very primitive tackle. In order to set the net, the line is put over the end of the pole and thrust under the ice and in the direction of the other hole, from which another pole with a hook on the end is run. The upper edge of the net has floats and the lower end sinkers.

A device somewhat in the nature of this is doubtless used by the Eskimo of Point Barrow for catching seals: four holes are drilled through the ice about a breathing-hole; from these a net is set under the breathing-hole, the lines being worked through the four corners of the space; the net is hung under the ice, and the seal coming to breathe is entangled therein.

Gill nets are set for seal after the ice forms along the shore. Murdoch reports that smaller seals are captured also in meshing nets of rawhide set along the shore in shallow water; he refers to many authorities on the same subject, but thinks that the meshing nets in northern Alaska came from Siberia.

The use of gill nets is universal throughout Alaska, whether it was an aboriginal invention or not. Elliott illustrates Eskimo women catching salmon in a gill net consisting of a pole and a triangular net attached. The pole rests on a stone at the water-line, while the net sinks in the water; as soon as a fish strikes, the women lift the pole, extricate the fish, and reset the net.

Mesh-fishing is also quite common among the Athapascan tribes, both on the Yukon and on the Mackenzie. Charlevoix states that in St Francis river, Canada, the Indians made holes in the ice through which they let nets five or six fathoms long; he also describes the taking of beaver by means of nets.

(f) *Set-hooks*.—These may be employed on land or in the water for taking mammals, birds, or fishes. A toggle or gorge may be so baited or placed that a duck or a goose, by diving and swallowing it, may be held under the water and drowned. A single hook may be set for vermin, or baited and left in the water, especially for large fish; for the smaller fish, the trawl or trot-line holding several hooks may be stretched across a body of water, and thus the game may be secured in the absence of the fisherman.

In one sense, most hooks used in taking birds and fishes are traps. They are baited and cast into the water or placed in such position on land that the hunter is out of sight. A line is attached to hooks of this kind, one end of which may be held in the hands of the hunter or tied to a buoy or other signal device.

Anything like a comprehensive treatment of this capture invention would far exceed the limits of this paper; but it is interesting to note that fish-hooks are not found in many American areas—large regions are entirely devoid of them, and even in ancient mounds and works all such relics are wanting. No picture of a fish-hook is seen in any Mexican or Maya codex, and Von den Steinen notes the entire absence of fish-hooks from large places on the affluents of the Amazon. The simplest form of this class of devices was seen by Lumholtz among the Tarahumari in northern Mexico; they catch blackbirds by tying corn on a snare of pita fiber hidden under the ground; the bird swallows the kernel, which becomes toggled in its esophagus, and cannot eject it.

Another simple form of hook used in catching fishes, reptiles, and birds is a spindle-shaped toggle with a string attached to the middle; the animal swallows the gorge, as it is called, and is thus securely caught.

In the order of complexity—a removal from the mere action of hand-hooks for capture—hook-traps may be divided into the following classes:

The seed on a string.

The gorge.

Hook at the end of string; squid hook.

Baited hooks.

Compound hooks.

Barbed hooks.

Automatic hooks.

(g) *Noose*.—This is a most interesting class of traps. A string or thong or rope, or a bit of whalebone and sinew, may have one end looped around itself so as to slip with perfect ease; the other end will be fastened to some object. This noose may be so placed that the animal will run its head or its foot into it and be caught; or it may be attached to a bent sapling or some form of spring which is held down by a device, to be liberated by the animal coming to seize the bait or lure. In order to prevent the animal from gnawing the snare, perforated sticks may be suspended just over the knot, thus making a very complicated device. The noose may be used in the air for birds on the wing, on the land in many ways, and sparingly in the water.

Boas says that among the central Eskimo water-fowl of all descriptions are caught in abundance in whalebone nooses fastened to a long whalebone line or to a thong. The line is set along the edge of a lake, particularly near the nesting-places. At shallow points these lines are placed across the water to catch the diving and swimming birds. Hares, ermines, and lemmings are also taken in whalebone snares. E. W. Nelson describes a noose for catching Parry's marmot, which involves a form of release mentioned also as used among the Iroquois. The victim enters the leadway as usual, and instead of pulling at the bait to release the spring, it gnaws in two a string which holds the snare down and

which has something on it appetizing to the animal. In the Iroquois rabbit-trap the string is steeped in salt.

The simplest nooses at Point Barrow are made of baleen and set around where fine gravel has been placed to attract the birds. Accounts are also given of nooses of whalebone set in water along the shores where ducks dive for their favorite plants, and which catch the birds by the neck. This reminds one of the use of the mesh net for the same purpose in California. From Nelson and other observers among the Eskimo, and from the examination of collections in the museums, it is learned that the methods and places of setting a noose are limited only by the habits of the different animals.

In the Mackenzie river country, and wherever the Hudson Bay Company's people have prosecuted their work, the snare and the springe are very commonly employed. Even reindeer and moose are strangled by means of snares set in their way.

Father Morice figures a great variety of applications of the noose. In a form called the hedge-snare an open gateway in the hedge is flanked by two stout posts, each of which has a notch near the top; the noose is placed open so as to fill the space between the posts; above the noose is fastened a stick just fitting across the gateway, the ends resting in the notches of the posts. The animal runs its head into the noose, releases the toggle, and the spring flies up. The insertion of the long stick or pole into the lines above the noose is very common in the northern Athapaskan area.

In Wood's *New England Canaan*, we have the quaintest description of a New England trap:

The Salvages take these in trappes made of their naturall Hempe which they place in the earthe where they fell a tree for browse and when hee roundes the tree for the browse if hee tread on the trap he is horsed up by the legg by means of a pole that starts up and catcheth him.¹

¹ *New England Prospect*, Prince Society: Boston, 1683, p. 202.

The Gentleman of Elvas¹ gives the following description of the trap among the Autiamgue tribes:

With great springes which lifted up their feet from the ground ; and the snare was made with a strong string, whereunto was fastened a knot of a cane, which ran close about the neck of the conie, because they should not gnaw the string.

Teit, in his account of the Thompson River tribe,² describes deer fences and springs used in catching large and small animals. Mrs Allison describes snares for catching deer and birds in the same region. This custom prevailed also in California among many tribes described by Frost and Powers. Zuñi boys catch blackbirds with snares made of horsehair fastened to rope ; these snares are laid on the ground and seeds placed between ; when the birds alight they put their feet into the snare and are drawn up and captured. The older Zuñis drive sunflower stalks into the ground and fasten a noose on the top ; when a hawk, watching for field-mice, alights on the stalks, its feet are ensnared ; being unable to rise, the hawk remains stupidly on its perch and allows itself to be captured.

The Tarahumari of Chihuahua are very ingenious in trapping rats, gophers, and deer. The ancient inhabitants of Copan caught quetzal birds in snares, and having plucked their beautiful feathers, set them at liberty again. In southern Brazil birds were snared by the feet, by the neck, and by the body. The Fuegians also use baleen nooses, which are set hidden in the grass for the purpose of catching partridges and other birds.

(h) *Clutching devices* are best exemplified by bird-lime, of which last there is not a specimen in the National Museum. The ordinary jaw trap of the hunters may be placed in this class ; the common steel rat trap is a good example. It is possible that spring nets may have been used in certain parts of America before

¹ Hakluyt, *Voyages*, vol. III, p. 114.

² *Memoirs of the American Museum of Natural History, Anthropology*, vol. II, pp. 247-249, figs. 228, 229.

the discovery, but the principle involved in the metallic clutching traps was not known.

C. KILLING TRAPS

The principles involved in killing traps are those mentioned under "hunting," as crushing, piercing, and cutting, giving a blow, a stab, or a slash.

(i) *Weight-trap*.—The simplest form of killing trap is the fall, or deadfall, in which a heavy weight drops suddenly upon the animal, destroying its life. The most interesting part of the deadfall, however, is not the crushing of the animal, which is a very gross and brutal operation, but the inventions for securing an unstable support of the weight and for releasing this support by means of the trigger or bait contrivance. There are few separate supplementary or accessory appliances to the deadfall, since the animal is slain outright.

The fall-trap was found in several of the areas mentioned. Essentially, in its least complex form, it consists of five parts: a heavy weight to crush the animal, a fixed support (perhaps a stake in the ground), an unstable support on which the weight rests, a catch which prevents the weight from falling until the bait is nibbled or the string pulled, and, lastly, the trigger itself. The whole weight then comes tumbling upon the animal. The central Eskimo form of deadfall has a slab of ice as a crushing weight, and the same sort of device is found among the western Eskimo. FitzWilliam¹ describes minutely a simple form of deadfall. The Hudson Bay Company's native trappers have a great variety of this particular type. Strachan Jones says the Kutchin caught foxes, wolves, and wolverines in the deadfall.

Maximilian figures a deadfall used for bears in Pennsylvania: the animal walks between two logs; above are two logs fastened firmly together; these are held up by a crossbar supported between two sticks; a lever attached to the logs passes over the

¹ *The Northwest Passage by Land*.

crossbar and is held down at either end in a ratchet, where there is a bait. The bear crouches between the logs, pulls the trigger, and releases the lever, which flies up and lets the ring that supports the fall slip off; then comes the tragedy.

Similar traps are noted in British Columbia and throughout the southwestern country, but I have no reference to a fall-trap in middle America or in South America. I am told by Dr Hough that the Hopi of Arizona have two very primitive forms of deadfall: one, for foxes, consists of a heavy stone slab worked between two upright slabs for wings; one end of the prop rests above against the stone, the other end rests on a cobblestone beneath; the least touch of the prop rocks the cobblestone and lets the weight down upon the fox. In this case the proverb of the rolling stone is reversed. In another form, used for taking birds, the box and the fall or stone slab are similar. The release consists of the following parts: first, the upright and the notched catch, precisely as in the figure-4 traps; to the bottom of the notched catch a short string is tied, having at the other end a small wooden toggle which is held by a little rod resting against it and caught at its other extremity in the grains of the sandstone slab. This is, indeed, a ticklish support, and the least touch overcomes the friction between the trigger and the slab; this sets free the toggle, which unwinds from the post, the hook-catch flies up, and the weight falls.

(k) *Point-traps* of the highest order were not common in America; that is, the use of arbalist or bow for the purpose of driving an arrow or bolt into the victim or for impaling, or the use of sharpened sticks in the pathway of land animals; but the throwing in the way of carnivorous animals of sharpened whale-bone splinters wrapped in fat was practiced.

Bancroft mentions a bear trap, used by the Aleuts, consisting of a board two feet square and two inches thick, furnished with barbed spikes, which was placed in Bruin's path and covered with dust. The unsuspecting victim stepped upon the smooth surface,

when his foot sank and was pierced by one of the barbed hooks. Maddened with pain, he put forth another foot to assist in pulling the first away, when that, too, was caught. When all four of the feet were spiked to the board, the beast fell over on its back and its career was soon ended by the hunter.

The wolf-bait, made of a piece of whalebone sharpened at both ends and doubled up, has been mentioned by Boas, and examples of the same device were brought to the National Museum by Nelson from St Michael, Alaska.

Lumholtz says that the Tarahumari catch deer by putting sharpened sticks in the track and stampeding the animals with dogs.

(1) *Edge-traps*.—There were in America two forms of knife or cutting traps of the most ingenious character. One may be called the wolf-knife. A sharpened blade was inclosed in a frozen mass of fat, and stuck up in a block of ice; the wolf, licking the fat, cut its tongue; the taste of the blood infuriated the animal, so that by licking the knife more it caused a larger flow of blood. All the other members of the pack were attracted to the same spot, devouring one another for the sake of the blood, till all were destroyed.

Another form of edge-trap is found in Alaska, where the blades are attached to one end of a lever, the other end of which is inclosed in a torsion spring of rawhide. The animal stops to pick the bait, pulls the trigger, and releases the unstable hook-catch; the knives fly over and the victim is brained.

DISTRIBUTION OF TRAPS IN AMERICA

To trace minutely each of the twelve types of traps throughout the eighteen culture areas of the Western Hemisphere would transcend the limits of this paper. Some of the types were confined to narrow limits, others were used quite universally.

The occurrence or non-occurrence was first of all owing to the presence or the absence of certain animal forms; again, it

depended on material for making traps. Deadfalls, for example, could not be employed where there were no trees or stones, but pitfalls might replace them.

Much must be attributed to the ingenuity of one tribe or another, to their contacts and suggestions, and to the demands made on them. A rigorous climate was more stimulating than one that was enervating. The demands of trade, first native and then European, provoked the inventive faculty immensely in such areas, for instance, as the Hudson Bay territory.

So the study of the distribution of traps is also a study of Amerindian intellect and of the primitive mind in its earliest struggles with problems in mechanics and engineering.

FAITH AS A FACTOR IN THE ECONOMIC LIFE OF THE AMERIND

BY ALBERT ERNEST JENKS

INTRODUCTION

No effort is made in this paper to discuss technical words and phrases, for if one first defines his use of such, and is consistent in application, no misunderstanding should occur.

By the term *economic man* is here meant the man who for future gain produces or traffics in desirable goods; such a man is gradually evolved from the natural man who produces or traffics simply to supply immediate wants. The term *production* here means the effort put forth by man to make or to possess some desired goods which before did not exist in the form or quantity in which they appear when finally produced (as implements, utensils, clothing, shelter, products of agriculture, of zoöculture, etc.); and it is also used to mean the effort put forth to obtain goods which before were the property of no one (as game, fish, natural vegetal foods, etc.). By *distribution* is here meant the division of the goods previously produced among the various members of the producing group (as the hunting-party, family, clan or gens, tribe, etc.). As here employed the term *consumption* means the act of final utilization performed upon the produced goods (as the eating of foods, the use of materials for clothing, shelter, etc., and the destruction or abandonment of property at funerals, feasts, etc.).

Economists have scanned and brushed aside the various cost-of-production theories, the demand-and-supply theories, and the utility theories until the foremost theorists seem now to hover over and to nestle as their own and as the final theory, the marginal-utility theory of value. Although marginal utility may

prove to be the final theory of value, yet back in the formative days—where few theorists have searched—there were numerous mythic influences, some of which assisted while others hindered the present-day accepted economic laws. These forces are beliefs; they are parts of the philosophy of primitive man. Some of these beliefs are found in his cosmology, others in his theology, others in his religion, and still others in his social and political philosophy.

Such beliefs occur constantly in Amerindian mythology, and, from the point of view of economics, they defy scientific or logical classification, or rational explanation. Yet there they are, real, potent forces affecting the economic life of the primitive American; and because they are facts they must be taken into consideration.

SOME BELIEFS AFFECTING PRODUCTION

For reasons perfectly understood, agriculture depends in its beginnings largely on the efforts of women, and so in fact do most of the efforts of primitive people excepting those of hunting, fishing, and the manufacture of man's implements. Yet no race has become an economic one (a vast aggregate made up of the individual economic man) while it depended on the productive efforts of its women. There is always the imperative necessity of maternity, and the duties of motherhood and wifehood preclude very general and sustained extra-family productive labors. And since there are no unmarried women in primitive society, there is no productive female class outside of the family.

The social philosophy of the Amerind draws a line between the labors of man and woman which cannot be mistaken. From his social viewpoint no greater indignity can be offered a man than to be reduced by his fellow tribesmen to the rank of a woman. He would prefer death at the hands of his tribesmen to the loss of his voice in the councils and his standing as a warrior or hunter, for those are rights and duties of manhood. It is

readily seen that a tremendous change, both intertribal and extra-tribal, must slowly have taken place before such a body of people could become an economic tribe depending on the sustained and continuous productive labors of its men.

Gen. Ely S. Parker, an educated Iroquois, says of the Six Nations: "Among all the Indian tribes, especially the more powerful ones, the principle that a man should not demean himself or mar his dignity by cultivating the soil or gathering its product was most strongly inculcated and enforced. It was taught that a man's province was war, hunting, and fishing. While the pursuit of agriculture, in any of its branches, was by no means prohibited, yet, when any man, excepting the cripples, old men, and those disabled in war or hunting, chose to till the earth, he was at once ostracized from men's society, classed as a woman or squaw, and was disqualified from sitting or speaking in the councils of his people until he had redeemed himself by becoming a skilful warrior or a successful hunter."¹ In the first quarter of the seventeenth century it was written of the Canadian tribes north of St Lawrence river: "In fact, they would make fun of a man who, except in some great necessity, would do anything that should be done by a woman." They said of a missionary who was carrying wood, "He's really a woman."² The same sentiment could be repeated almost indefinitely from the various Amerind tribes.

It is not claimed that large fields of maize were not cultivated by the Amerind, for facts prove the contrary.³ After a careful study of these people as agriculturists, Mr Carr says, in substance, that they raised maize in large quantities; and while, as a matter of fact, the women, children, and old men always cultivated the fields, yet the warriors cleared the ground, and, when not engaged in war or hunting, aided in cultivating and harvesting the crops.

¹ Carr, *Mounds of the Mississippi Valley*, pp. 17-18.

² Thwaites, *Jesuit Relations and Allied Documents*, vol. V, p. 133.

³ Harshtberger, *Maine, Penn. Univ. Studies*; also Carr, *op. cit.*

The amount of such assistance varied, being greater among the tribes south of Ohio river and less among the Iroquois tribes.¹

While it is found that social belief fixing division of labor between sexes was disintegrating among the eastern agricultural tribes, and men (when no manly pursuits were at hand) often assisted the women, yet the primitive social division of labor was much more strictly adhered to among the non-agricultural tribes of America. However, throughout the continent such belief was a barrier to any expanding existence due to a growing economic life.

The Menomini tribe in Wisconsin has a belief which has kept it from sowing fields of the nutritious, productive cereal *ma-no'-mín*, or wild rice (*Zizania aquatica* L.). One of their religious myths, treating of the origin of the tribe, explains how they first obtained this cereal, which is so important a staple with them that the tribal name is derived from it. While the young tribe lived on Menominee river, the boundary between the upper peninsula of Michigan and Wisconsin, Mā'nābūsh, a half-man, half-god mythic creation of the tribe, gave to them the extensive fields of wild rice along Menominee river and told them that they should always have the grain. The tribe has moved twice during historic time — first to the vicinity of Lake Winnebago, Wisconsin, and then to their present reservation north of that lake. They claim never to have sown the grain, because, they say, if Mā'nābūsh wanted them to have it, he would provide it. In the year 1852, when about to take residence on their present reservation, the agent held repeated councils with the Menomini for the purpose of inducing them to gather the grain to be resown in their new home; but his efforts were futile, and the tribe points with pride today to the large fields of the plant now growing in their vicinity which Mā'nābūsh has provided them since they took reservation.

According to Niópet, chief of the tribe, it was about ten years after the Menomini removed to their present reservation before

¹ Carr, *op. cit.*, p. 35.

Lake Shawano (where the annual crop has since been gathered) produced the grain in sufficient quantities to be harvested. Yet during those years they claim not to have sown a single kernel. Of recent years the land around the lake has been owned by whites who quite generally refuse the tribe access to the shore, so that their harvest is often a failure; nevertheless, they steadfastly refuse to sow the seed in any of the many suitable and available places. The restricting influence of this belief is more noticeable when it is known that the Ojibwa of Wisconsin (brothers of the Menomini) sow wild rice. They also claim that all of the wild-rice beds in the state which they now harvest were originally sown by their tribesmen from seeds obtained as far west as the Red River of the North.

The tutelar god, the "my god" of the family, clan, and tribe, is often a plant or animal concerning which there is some religious belief which forbids the particular human group (especially the clan which calls its tutelar god its "totem") from killing or possessing the animal or plant. And strange as this may seem, the belief is operative in districts where the thing tabooed is often not only a food, but frequently a staple which furnishes shelter and clothing as well to the clans of the same tribe.

Among the reasons for such beliefs are these: Certain animals (as the grizzly bear) are the abiding-places of men's spirits;¹ certain animals (as the owls) are the ghosts of men;² and certain animals, like the bear and the bison, had common bear and bison ancestors with the clan or tribe. This is the reason that the Menomini today "begs the pardon" of the bear which he has killed, calling it "elder brother," and telling the bear either that the killing was accidental or else that he must forgive him this one offense for his poor family is starving.

"The Crow Indians will neither trap nor hunt a bear. They believe it is bad luck to kill a bear, and will not touch the food. . . The Crows say the bear has a spirit in him, and to kill it offends

¹ Grinnell, *Blackfoot Lodge Tales*, 1892, p. 99.

² *Ibid.*, p. 275.

the great Wa-con Ton-ka. If a Crow meets a bear, when out hunting, he will go around him, and if the bear attacks him he will run away."¹

When taboo is put on the production of or effort to obtain some desirable goods, it is usually also put on their consumption. In consequence of this fact further citations of productive taboos will be postponed until beliefs about consumption are presented, at which time the gentes of the Omaha tribe will be referred to, as the facts are representative and are brought forward by an unquestioned authority.

SOME BELIEFS AFFECTING DISTRIBUTION

It was seldom that an individual or a family of an Amerind tribe accumulated more property than its neighbors. There were exceptions, but the social philosophy of the Amerind was a great leveler. A chief's lodge might be the largest one in the village, but it was not always so. His horses might be the most numerous, or the swiftest, but such was by no means invariably the case. If the individual possessed great wealth, it was in some form which could be personally conveyed and which seldom lasted beyond his death. There was no opportunity for one person or family to become permanently richer than the neighbors, because if anyone in a social group was in need, food, clothing, shelter, dogs, horses, anything, everything was at the disposal of the needy party. When want raised the door-flap of a wigwam, it was speedily sent away and not allowed to enter until it walked into every wigwam of the group.

It was written of a Florida tribe, near the close of the eighteenth century, that a granary was built in the maize-field, into which, at harvest-time, "each family carries and deposits a certain quantity, according to his ability or inclination, or none at all if he so chooses." Its purpose was "that of a public treasury, supplied by a few voluntary contributions, and to which every

¹Geo. P. Belden, *Sketches of the White Chief*, 1872, p. 137.

citizen has the right of free and equal access, when his own private stores are consumed, to serve as a supply to fly to for succor, to assist neighboring towns whose crops may have failed, accommodate strangers or travelers, afford provisions or supplies when they go forth on hostile expeditions, and for all other exigencies of the state."¹

A skilful hunter was usually rewarded, not by greater personal supplies of economic goods, but by the esteem of his fellows. Definitely known social laws divided the products of the chase, and it was often true that the unskilled hunter obtained as large a share as the most skilful. Among the Omaha tribe a deer, when killed, was generally divided into four parts: when there were five men in the hunting party a fifth division was made.² They divided an elk in five sections, and when the elk was large it was often divided in six parts. When a hunter shot a wild turkey, a goose, or a raccoon, any person standing near might have it without question, if he could get hold of it first. The hunter "thinks that he can get the next one which he kills."³

Among the Menomini tribe this law of division of the spoils of the chase operates today, although the moccasin (about the last visible remnant of the primitive dress of the Amerind) is seldom seen on the reservation. In the autumn of 1898 a young half-blood, home from college, shot a deer but succeeded only in breaking its hind-legs. The young man ran home for more ammunition, leaving his deer, and unconscious of the tribal law of his fathers. When he returned he found that another hunter had not only cut the throat of the deer but had divided the meat among his fellows. The young man who shot the animal and left it helpless sitting in the snow received no share, but became the laughing-stock of the tribe.

¹ Bartram, *Travels through Florida*, London, 1791, p. 512.

² J. Owen Dorsey, Omaha Sociology, in *Rept. Bur. Ethnology*, 1881-82, p. 300.

³ *Ibid.*, p. 301.

One who attempts to become rich by accumulation is socially ostracized by the tribe. An Ojibwa half-blood on the Lac Courte Oreille reservation, Wisconsin, has twice been well off (as compared with the others of the tribe), having sold his pine timber to greater advantage than they, but in spite of advice from white friends, and well-meant promises, he has each time given away his property by holding feasts and dances, for which functions he furnished presents and provisions for hundreds of neighbors during weeks at a time. He is now no richer than those about him, but he is influential in the tribal councils, and all speak a good word for him.

In the middle of the nineteenth century it was written of the Cowitchin tribe on the Pacific coast that Saw-se-a, a chief, gradually accumulated, by exacting tribute from his tribe, a large amount of goods which he was in the habit of distributing to his guests at a feast. A chief was accustomed to give such a feast every three or four years. Paul Kane, our authority, heard of a chief who gave away at one time "twelve bales of blankets, twenty to thirty guns, numerous pots, kettles, pans, knives and other cutlery, great quantities of beads, numerous beautiful Chinese boxes, etc." Such generosity adds to the importance of the chief among his tribesmen.¹

SOME BELIEFS AFFECTING CONSUMPTION

Beliefs affecting consumption are numerous and varied. One of the chief reasons for taboo against eating foods arises from religious belief regarding the clan totem. Of the Elk gens of the Omaha tribe it is said: "The members of this gens are afraid to touch any part of the male elk, or to eat its flesh; and they cannot eat the flesh of the male deer. Should they accidentally violate this custom they say that they are sure to break out in boils and white spots on different parts of the body."² The *Wazigije* gens

¹ Kane, *Wanderings of an Artist*, 1859, p. 225.

² Doney, *op. cit.*, p. 225.

(a subgens of the *Iñke-sabí*, Black-shoulder, gens) of the Omaha tribe may not eat the tongues of the bison, and they are not allowed to touch a bison's head, for the members of that gens were originally bison, and dwelt beneath the surface of the water before they came on the earth. Another subgens of the tribe does not eat red maize for fear of breaking out with running sores about the mouth.¹ The Omaha *Hañga* gens (meaning "ancestral" or "foremost") is also a buffalo or bison gens. This gens has four subgentes, two of which may not eat buffalo sides, geese, swans, or cranes. The other two subgentes may not eat buffalo tongues, but they may eat buffalo sides.² The *Jatada* gens of the same tribe has four subgentes which have the following consumption taboos:

1. *Wasabe-hiraji* (meaning "Those who do not touch the skin of the black bear") are not allowed either to eat the flesh or to touch the skin of a black bear.³
2. *Wajinga-jataji* (meaning "They do not eat (small) birds") is not allowed to eat prairie-chicken when sick.⁴
3. The Eagle subgens is not allowed to touch a buffalo head.⁵
4. The Turtle subgens is forbidden to touch or to carry turtles, but its people may eat turtles.⁶

Members of the Buffalo-tail gens of the same tribe may not eat a calf (bison or domestic) while it is red, but they may eat it when it becomes black. Like members of the *Wawigiji* gens they are not allowed to touch a bison's head.⁷ The Omaha tribe also has a Deer-head gens the members of which may not touch the skin of any animal of the deer family; they are not allowed to use deerskin moccasins; they may not use deer-fat for hairoil as all the other Omaha may; however, they are not forbidden to eat deer meat.⁸ Members of the Omaha *Iñge-jide* gens do not eat buffalo calves.⁹

¹ Dorsey, *op. cit.*, p. 231.

² *Ibid.*, p. 235.

³ *Ibid.*, p. 237.

⁴ *Ibid.*, p. 238.

⁵ *Ibid.*, p. 239.

⁶ *Ibid.*, p. 240.

⁷ *Ibid.*, p. 244.

⁸ *Ibid.*, p. 245.

⁹ *Ibid.*, p. 246.

None of the Omaha gentes eat dried fish, dried fish-spawn, slugs, dried crickets, grasshoppers, or other insects; nor do they use as a drink any fish or animal oil.¹

Schoolcraft² wrote of a California tribe in the vicinity of San Diego that they do not eat the flesh of large animals; and this taboo is based on the belief that the souls of certain human generations long ago entered such animals. The Mission people of this tribe removed the taboo on beef because they subsisted largely on that meat. Schoolcraft says that a half-blood once cooked bear meat and gave it to the Mission people to eat for beef, and that as soon as they learned of the deception they were taken with sudden retching which ceased only when the cause was removed. He further relates that the reproachful epithet, "They eat venison," used by the tamer tribes for the wilder ones, is based on such taboo. The same author says that the Navaho never eat the flesh of the gray-squirrel.³ It is claimed that the Apache of Arizona refused to eat bear meat even when so cooked by the whites as to be indistinguishable from beef.⁴

One of the great forces standing in the pathway of the Amerind and blocking his steps from natural manhood to economic manhood is a religious force causing consumption of property at the owner's death. At such time property is abandoned, or killed, or burned, or broken, or otherwise injured, or deposited with the corpse. The fundamental idea behind all such action is the belief that all material things have spirits or shades, and some act is performed which is supposed to enable the shades of the property to accompany the shade of the owner to the existence beyond this life.

Le Jeune quotes a member of a tribe near Quebec in 1633-34 as saying that the souls of the Amerind "hunt for the souls of Beavers, Porcupine, Moose, and other animals, using the soul of

¹ Dorsey, *op. cit.*, pp. 203-204.

² *Indian Tribes*, vol. v, pp. 215-216.

³ *Ibid.*, vol. iv, p. 214; see also vol. iii, p. 213.

⁴ Bartlett, *Personal Narrative*, 1854, vol. 1, p. 321.

the snowshoes to walk upon the soul of the snow, which is in yonder country [where the sun sets]; in short they make use of the souls of all things, as we here use the things themselves."¹

Fire is supposed so to dematerialize the object burned as to allow its spirit to proceed untrammelled to the spirit-land. Breaking or drilling the implements and utensils was practiced for the same reason—to free the spirit from the object.

The Amerindian idea of a life beyond death is, in the main, that there is a continuation of the present conditions so far as wants and means of satisfaction are concerned. The individual will then need what he has needed or found useful here; and it was therefore a universal custom to supply food at the burial-place, often for many months after death. Although the idea of individual property-right manifests itself in the consumption of goods at the funeral, the idea of property as property is subservient, it is believed, to the idea that the individual will need the spirit of such property to meet the wants of his spirit.

Of a well-known tribe we read: "No Navajo will ever occupy a lodge in which a person has died. The lodge is burned, and the favorite animals of the deceased are usually killed, to accompany him on his intended journey."² Grinnell says of the Blackfoot tribe that when a chief or noted warrior dies, his lodge is removed a short distance from the village, and the corpse with its personal effects is left inside. "Outside the lodge, a number of his horses, often twenty or more, were killed, so that he might have plenty to ride on his journey to the Sand Hills [the place of future existence], and to use after arriving there. . . . In ancient times, it is said, dogs were killed at the grave."³ "The Muscogulges [of Florida, in 1791] bury their deceased in the earth, . . . depositing with him his gun, tomahawk, pipe, and such other matter as he had the greatest value for in his life time."

¹ Thwaites, *Jesuit Relations and Allied Documents*, vol. VI, p. 179.

² Schoolcraft, *op. cit.*, vol. IV, pp. 213-214.

³ Grinnell, *Blackfoot Lodge Tales*, 1892, pp. 193-194.

The remainder of his effects were divided among his wives and children.¹ It is said of the Round Valley tribe of California that "everything owned by the deceased," and often much donated material, are thrown into the grave.² Of the Tolkotins of Oregon we read that "whatever property the deceased possessed is placed about the corpse," and if he was a person of consequence his friends purchased other articles, such as apparel, and laid them also with him.³

In prehistoric burial-places it is common to find pipes, tools, and war implements of stone and metal buried with the warriors; utensils and ornaments of stone, shell, and metal buried with the remains of the women, and toys buried with the children. Such exhumations reveal only the few objects of relatively indestructible materials which were consumed at the funerals. But some idea of the extensive consumption of property at the death of a person may be had from a list of materials obtained from the scaffold burial of a year-old Cheyenne child in recent time. The casket contained the following articles: seven buffalo robes, five blankets, three robes of buffalo calfskin with hoods elaborately ornamented with beads, five yards of blue cassimere, six yards of red calico, six yards of brown calico, one infantry overcoat, one beaver cap ornamented with copper disks, gaudy colored sashes, a large striped sack matting, bundles of straps and buckles, long wampum necklaces, strings of pieces of *Haliotis* from the Gulf of California (so highly valued by the tribes both east and west of the Rocky mountains), a red flannel cloak, a red tunic, frock-leggings with bead ornaments, yarn stockings, beaded deerskin moccasins, numerous trinkets, a porcelain image, a china vase, strings of beads, several toys, a pair of mittens, fur collar, skin pouch, etc.⁴

It seems probable that the burial just referred to was an ex-

¹ Bartram, *op. cit.*, p. 515.

² Yarrow, *Mortuary Customs*, 1880, p. 15.

³ Ross Cox, *Adventures on Columbia River*, 1831, vol. II, p. 387.

⁴ Yarrow, *op. cit.*, pp. 69, 70.

travagant one, yet it illustrates that the destruction of property is much greater than a burial-place often reveals, because of the perishable nature of much of the material, and it proves also that the economic idea does not hold sway in the minds of the Amerind. The above-mentioned consumption of goods was made on exactly the same superstitious grounds as though the family of the child had been able to donate only one-tenth the amount. The destruction of property seems appalling when it is recalled that the child (the fictional owner) had not produced a penny's worth of the goods which in this case must have cost more than a hundred dollars—a sum equal to real wealth for a Cheyenne family at that time.

A member of the Algonkin tribe near Quebec in 1632-33 said: "We do not speak any more of the dead among us; indeed, the relatives of the dead never use anything that was used by the dead man during his lifetime."¹ Of the Blackfeet we are told by Grinnell: "If a man dies in a lodge, it is never used again. The people would be afraid of the man's ghost. The lodge is often used to wrap the body in, or perhaps the man may be buried in it."² An almost endless list of similar testimonials of the wholesale destruction of property at funerals might be cited.

Property was sacrificed for several other reasons than that its shade or spirit might accompany that of its late owner. In fact, the Amerind was almost daily at sacrifice to some of the shades which he thought dominated nature. Grinnell also writes concerning a rather peculiar and apparently elaborate sacrifice by the Pawnee. Among that tribe is a belief that certain animals, called *Nakitrac*, possess miraculous powers given them by Ti-ra'-wa, the impersonal, intangible deity of the tribe. These animals have five different council-chambers. One of these is a hole which contains water; and Grinnell says of it: "At certain times the people gather there and throw into this hole their offerings to Ti-ra'-wa,

¹ Thwaites, *Jesuit Relations*, vol. v, p. 135.

² Grinnell, *Blackfoot Lodge Tales*, 1892, p. 193.

blankets and robes, blue beads, tobacco, eagle-feathers, and moccasins."¹

The foregoing facts, selected from a great body of similar evidence, reveal that faith or belief,—sometimes social, sometimes incipiently political, but at most times superstitious—is the great stumbling-block which everywhere lay in the pathway of the primitive American leading toward economic manhood; and they also show that, no matter what may be the final or present-day measure of value, there was a time when superstitious faiths or beliefs raised and lowered values at the beck and nod of mere whim and fancy.

¹ Grinnell, *Pawnee Hero Stories*, 1893, p. 359.

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PROPERTY-RIGHT IN EAGLES AMONG THE HOPI

By J. WALTER FEWKES

Spanish accounts of the extreme southwest, dating as far back as the middle of the sixteenth century, mention the existence of domesticated "fowls" or gallinaceous birds among the Pueblo Indians. As no direct statement concerning the uses to which these birds were put is made in the early chronicles, it is naturally inferred that they were kept for food, and the discovery of many turkey-bones in pueblo ruins would seem to support this conclusion. There are also found bones of the turkey made into various implements, as awls, bodkins, whistles, and the like, indicating that a great many of the birds were killed, and implying that they were highly prized for purposes other than food.

Few writers, early or recent, seem to have been particularly impressed by the fact that the Pueblo tribes of New Mexico and Arizona, like those of Mexico, domesticated birds, and comparatively little attention has been paid to this fact in studies of zoö-culture among the North American aborigines.

Birds and dogs were the only animals which the Hopi had under domestication at the time they were first seen by Spaniards, in the middle of the sixteenth century. It may be instructive to consider the status of each in relation to the development of zoöculture.

THE TURKEY AND THE PARROT

Although there is no doubt that the bird with long, pendent chin, to which early Spanish travelers refer as having been seen among the Pueblos, was no other than the turkey-cock,¹ when our

¹ As pointed out by Winship. The first accounts of the Hopi make no mention of their having turkeys, but as the Rio Grande tribes possessed these fowls, they were also doubtless kept in the Hopi villages.

own people first visited these villages, fifty years ago, the Hopi had no tame turkeys; indeed as late as 1890 there were none of these birds and but few chickens at the Hopi villages. The turkeys now owned on the East Mesa of Tusayan are descendants of those introduced about 1894 and later. There are many of these domesticated birds on all three mesas, and they appear to thrive notwithstanding the rather harsh way in which they are sometimes treated.

Since reading Castañeda's account¹ of the birds which the Pueblos had in captivity, the thought has occurred to me that it is unlikely they were used for food.² Other writers have expressed the same doubt, and have called attention to other purposes which these birds served. In seeking information on this point from the Hopi, there have come to my knowledge a few significant facts regarding property-right in eagles which seem to bear on the general question of domestication of animals by the North American aborigines.

The Hopi now keep turkeys mainly for their feathers, which are used more than those of any other bird in the manufacture of prayer-sticks. They occasionally eat the eggs, and sometimes use the albumen from the same to glaze masks and other ceremonial objects. It is not improbable that the use of the turkey-feather, which is such a constant feature of prayer-sticks, is in some way akin to the sacrifice of birds by some, at least, of the sedentary tribes of Mexico. As the prayer-stick is a sacrificial object, the feather tied to it should be regarded as representative of the bird from which it was taken, and would come under the group of sacrifices called substitutional, or symbolic, a part for the whole.

Although no mention is made of the fact in early accounts, there is archeological evidence that parrots were sometimes kept

¹ Castañeda also states that some of the natives of what is now northern Mexico had tame eagles, but no reference has been found in his writings to the keeping of raptorial birds by the New Mexican Pueblos.

² See Powell, *Indians of North America*, in *Johnson's Universal Cyclopedia*, vol. IV, 1896.

alive by the Hopi for ceremonial purposes. In the ruin called Wukoki, near Black falls, on Little Colorado river, Arizona, Mr Doney, of Flagstaff, found a desiccated parrot to which a few feathers still adhered.¹ This was buried in a room with the remains of a child, and to its leg a prayer-stick was attached. Parrot-bones have also been found in ruined villages of the Hopi not far from their present pueblos, and they have been reported from other parts of the Pueblo area. Parrot-feathers are highly prized by the Hopi for the ornamentation of their masks, and in former times were brought from the settlements on the Rio Gila and from the northern states of Mexico, where they were obtained by barter.

THE EAGLE

Of all feathers used by the Hopi in their ceremonies, those of the eagle are valued next to those of the turkey. The eagles of Tusayan are not kept in cages, as at Zuni; nevertheless, the true ownership of these birds is recognized by all. A Hopi speaks of his eaglets and eagle-nests as he does of his sheep or horses, regarding them as clan property. He takes no care of them; but when he wishes their feathers, he plucks them from birds which he owns and from no others. This recognition that certain wild birds belong to one clan, and others to another, has not, so far as I am aware, been specially commented on by writers on zoöculture among the Indians. We can call this retention of birds for religious purposes a stage of domestication, although it is only a little higher than promiscuous hunting of wild animals. When, as at Zuni, eagles are brought to the pueblo and kept alive from year to year, there exists an advancement beyond the Hopi custom of merely capturing the feral birds from the nests of their owners. Anyone in Tusayan who kills an eagle, not his own, within about fifty miles of Walpi, trespasses on the property-rights of others. In other words, the eagle, although wild, is

¹ See this journal, vol. II, No. 3, pp. 441-442.

regarded, from the point of view of ownership, in the same way as is the horse, cow, or sheep,—eagles are property over which the Hopi have rights which all their number respect. Unfortunately, however, this right is often violated by white men or by the Navaho, who see no reason why wild birds should belong to a person living perhaps forty or fifty miles away. There are no other wild creatures which the Hopi now regard in the same light of ownership that they do the eagle.

As already suggested, proprietary rights with reference to the eagle inhere in the clan rather than in the individual; nests, eaglets, and adult eagles are owned by the whole clan, not by any one member, although the male head or chief of that clan represents its rights; he speaks of them as his property, and has inherited the right to do so through his mother. This is an ancient form of ownership which prevails likewise in the case of land, springs, peach-trees, houses, and other possessions. Some clans are poor, and own no eagles; but among the "wealthy," two members of the same clan may have nests in different localities. As a rule, however, the nests of eagles near village ruins are owned by the descendants of clans which once lived in their neighborhood.

OWNERSHIP OF EAGLE-NESTS EFFECTED BY CLAN MIGRATIONS

As has been previously shown, the present population of Walpi is composed of descendants of clans which from time to time drifted together from different directions for mutual protection. Some of these clans came from as far north as Rio Colorado, while others came from the Gila basin and still others from Rio Grande valley. In their early migrations from distant pueblos to their ultimate homes, each clan halted at intervals, where towns were built but were afterward deserted. The sites of these abandoned villages are indicated by ruins which are very numerous in Arizona and also in parts of New Mexico. Thus it resulted that men of certain clans claim rights in springs

near ruins in which their forefathers lived, and at times of ceremony they revisit these ancestral springs to obtain water which is considered particularly efficacious in the performance of ancient rites; thus, also, certain tracts of land are regarded as the property of this or that clan. The present ownership of eagle-nests in the vicinity is a survival of a similar claim. A consideration, therefore, of the situation of eagle-nests claimed by clans is directly related to former migrations of the clan. In order to appreciate the bearing of the claims of clans to eagle property in different directions from Walpi, let us briefly consider the salient points in the early history of that pueblo.

In remote times there came into what is now the Moki reservation, several clans from New Mexico, which founded different pueblos, among them being (1) a settlement of Bear clans on the terrace below the present site of Walpi; (2) a pueblo, called Sikyatki, about three miles away, and (3) a village called Awatobi. At this early period there was a settlement of Flute people at Leñanobi, northeast of Walpi, but there is no reliable information regarding the origin of its former population.

In the course of time there entered the country from the north a group of Snake clans which joined the Bear settlement. They had formerly lived with the Horn clans, but in their southern migrations the latter separated from the Snake people and joined the inhabitants of the Flute village, or Leñanobi. When the Snake clans became well united with the Bear settlement, they were joined by combined Horn and Flute clans, which deserted Leñanobi. At this time there were three large pueblos near the East Mesa, viz., Walpi, Sikyatki, and Awatobi. The inhabitants of Walpi and Sikyatki had frequent trouble with each other, which culminated in the destruction of the latter town and the absorption of its clans by the former. The remaining two pueblos, Walpi and Awatobi, increased in size, each receiving increments to its population until the beginning of the eighteenth century, when Awatobi was destroyed by the people of Walpi, and its

inhabitants scattered, the majority going to Walpi and the Middle Mesa pueblos.

Walpi thus by conquest became the dominant pueblo of the region about the East Mesa. In the early part of the eighteenth century inroads by the Apache along the Little Colorado forced the villagers there to seek refuge in the north, and groups of clans, of which the *Patki* (Rain-cloud) was the most prominent, migrated to the vicinity of Walpi and built a pueblo called *Pakachomo*. When, later on, this village was abandoned, the Rain-cloud clan, by invitation, united its members with the existing Hopi villages, a considerable number settling at Walpi. Shortly after this event, the Ute, pressing down from the north upon Walpi, which was now occupied by the several clans enumerated, threatened it with destruction; consequently certain Tanoan people of Rio Grande valley were invited by the chief of the Snake clan to come and render aid. The *Asa* clan, and later a group of Tanoan clans from a pueblo called *Tcewadi* responded; they repulsed the invaders, and were rewarded by the Walpians. The *Asa* people were invited to make their home at Walpi, while the clans from *Tcewadi* were given a site on the mesa for a pueblo of their own, which their descendants still occupy. This is the village of Hano.

About the middle of the eighteenth century, on account of sickness and famine at Walpi, the *Asa* moved to *Tsegi* cañon, or Cañon de Chelly; but they later returned and founded the pueblo now called *Sichomovi*, between Walpi and Hano. This town is not very ancient, for there is an old woman, the last of the *Asa* women now living in Walpi, whose mother, they say, once lived in *Tsegi* cañon.¹

¹ Almost all Hopi clans are represented among the Navaho. An incident in the history of the *Pakab* clan shows one of the ways in which this has been brought about. Years ago a few men, women, and girls of this clan were attacked by the Navaho in the fields below Walpi. The women and girls were made prisoners, and in time took Navaho husbands. The children by these intertribal unions are regarded by the Hopi as members of the *Pakab* clan.

Let us now consider the eagle-nest property of different Hopi clans, in their geographical distribution.

One of the oldest, if not the most ancient of all the Walpi clans, is the Snake, which formerly lived at a place called Tokonabi, near Navaho mountain, far north of the Hopi mesas. In their migration southward the members of this clan were accompanied by others, among whom was the Horn clan. They built houses at intervals in their migration, the ruins of which are pointed out, and which are still known by name to the traditionists of the clan. On the abandonment of a pueblo several miles north of Walpi, the Horn clans separated from the Snake and went to a pueblo called Leñanobi, which, as its name implies, was inhabited by Flute (*Leña*) clans. After this consolidation these two clans abandoned Leñanobi and joined the Snake settlement at Walpi.

The eagle-nests of the Snake clan are situated a few miles north of Walpi, not far from one of the abandoned Snake pueblos; they claim others north of this which, however, they never visit. In most ancient times this clan doubtless had eagle-nests at Tokonabi, but as it drifted southward and the country which they left became occupied by hostiles, visits to these nests were gradually dispensed with. Those which they still claim are near their last settlement, but visits to them became more or less dangerous after the hostile Ute raided the Hopi farms not many years ago.¹

The Horn (*Ala*) clan owns the eagle-nests about Wakash (Span. *Vaca*, Cow) spring, northeast of Walpi. Their eagle claim is contiguous to that of the Snake clan, as would naturally be expected from the fact that these two clans once lived together at Tokonabi.

One of the first clans to settle in the neighborhood of the East Mesa was the Firewood (*Kokop*), whose pueblo, called Sikyatki, in early times was larger than Old Walpi. There is evidence that it

¹ Since about the beginning of the eighteenth century the Hopi have not been molested by the Ute, but the incursions of the Apache from the south continued far into the present century.

was a flourishing place when the Snake clans came into the country, and that it was one of the most ancient settlements in Tusayan.

The Firewood clans came from the east, probably not far from the pueblo of Jemez, and during their early migration lived for some time in Keam's cañon, not far from Keam's trading post, where the ruin of their settlement may still be seen. This clan claims as its property all eagle-nests in the upper end of the cañon named, near the school and their former pueblo. Indeed, there is a farm owned by this clan about halfway between the school and Keam's store.

The *Honau*, or Bear, is probably the oldest¹ of the Walpi clans, and appears to have occupied the site of Walpi before the advent of the Snake clan. The former is reputed to have come from New Mexico and to have lived at one time in a pueblo on the Rio Grande. The clan is now extinct with the exception of three persons, one of whom, Kotka, the chief, assumes a prominent part in several ceremonies. Little can be learned concerning the route of migration of the Bear clan westward from the Rio Grande valley, but it is said to have passed through Keam's cañon to Turkinobi, a now-ruined pueblo not far from Sikyatki. The *Kokyan*, or Spider clan, one of the group of Bear clans, claims the cliffs at the entrance of Keam's cañon as its eagle preserves.

The *Jiba* (Tobacco) clan once lived with the *Patki* (Rain-cloud), and the *Kikute* (Lizard) at Palatkwabi, a mythic region in the far south. They migrated northward from that place to Homolobi, on the Little Colorado, near Winslow; but this village was in turn abandoned, the clan continuing northward by a well-defined route,² until they came to Jeditoh valley, where they

¹ The traditionists of both the Bear and the Snake clan claim that their ancestors were the oldest settlers in Walpi, but the balance of evidence strongly supports that of the former.

² It is said by good authority that the *Pita* left the *Patki* clans at a place called Kokopelki, going thence to Awatobi. The *Pikyar* clan also left the *Patki* at the same place and went to Akokyabl ("Acoma"), now a ruin in Jeditoh valley or on Awatobi mesa. The *Pikyar* later went to the Middle Mesa.

joined the population of Awatobi. On the destruction of that pueblo, the *Piba*, under their chief, Tapolo, settled in Walpi. Hani, the "governor" of Walpi and a lineal descendant of Tapolo, claims for his clan, ownership of eagle-nests in the crags near Awatobi on both sides of Jeditoh valley eastward to Hubbell's store.

As before stated, the Rain-cloud (*Patki*) clans formerly lived at Palatkwabi, but migrated northward to Homolobi, near Winslow. Abandoning this town, they went farther northward, building a pueblo not far from the Moki buttes. When they left this habitation, the ruins of which are still traceable, they continued their course to the Walpi wash and erected homes at Pakachomo, in the plain about three miles from Walpi, where the remains of house-walls are still pointed out. From Pakachomo the clan went to Old Walpi by invitation of the chief of the latter pueblo. Anawita, the head-man of that clan, claims as his property all eagle-nests in the Moki buttes as far east as the Holbrook road. The eagle property of the *Kukútc* (Lizard) clan begins at Bitahútcí on the same road, and extends eastward to the ruin of Kintiel, twenty-five miles north of the railroad.

The *Pakab* (Reed) clan lived at Awatobi until its destruction, but before they reached that place they inhabited a pueblo called Kwavunápi,¹ about forty miles north of Navaho station on the Santa Fé Pacific Railroad. When Awatobi was destroyed the *Pakab* went to the Middle Mesa, and settled at a pueblo near the spring at its base. From this place part of them went to Mishonginovi and part to Walpi. Pautiwa, chief of this clan, claims all the eagle-nests near Kwavunápi and the region south of that ruin.

The *Kukútc* (Lizard) clan, which, like the *Patki*, originally came from the far south and had settlements at one time on the

¹ The most distant pueblo east of Walpi inhabited by the *Pakab* clan is called by them Kwavunápi, the ruin of which has not yet been identified. This clan is closely related to ancient Zuni clans.

Little Colorado at or near Homolobi, owns the eagle-nests east of the Holbrook road around Bitahūtci,¹ or Red Rocks, about forty miles from Walpi.

The eagle-nests near Kicyuba, north of Walpi, a sacred spring of the *Katcina* clan, are owned by Supela, of the *Patki* clan. This clan never lived in that region, hence there is no way of accounting for Supela's claim except that he inherited it from Oraibi relatives.²

The eagle-nests west and northwest of the East Mesa, along the lower part of the Little Colorado (*Pala-baiya*³), and portions of the Great Colorado (*Pisis-baiya*), belong to clans of Oraibi and the Middle Mesa pueblos, hence the Walpians lay no claim to them. I have not studied the clans of the latter villages, but there is evidently good reason for their claim, judging from the composition of the clans in these pueblos. Probably many of their ancient clans came from the numerous houses, now in ruins, within the drainage of Rio Colorado. Among these may be mentioned the Squash (*Patuñ*) clan, now extinct at the East Mesa villages.

The clans of the Tewa pueblo of Hano have no eagle-nest property near their pueblo. This can readily be explained by the fact that they were late arrivals in Tusayan, consequently all available nests had been preempted by existing Hopi clans.

It thus appears that the present claims to ownership of eagle-nests are based mainly on the situation near former places of residence. This fact can hardly be regarded as a mere coincidence, nor do the Hopi consider it as such; indeed, they regard this proprietorship as a proof that the country in which eagle-nests are situated is theirs, and have repeatedly urged me to so inform

¹ Near Maupin's trading post.

² Naka, present chief of the *Katcina* clan, which formerly lived near Kicyuba, claims no eagle-nests.

³ It is an interesting fact that the name *Pala-baiya*, "Red river," has the same meaning as the Spanish term Rio Colorado. Among the Hopi, red is the color symbolically assigned to their south, and the Little Colorado in its middle course is in the same direction from the Hopi towns.

those engaged in surveying the boundaries of their reservation. The legendary claim by the Hopi that their ancestors came to Walpi from different directions is supported by the situation of the eagle-nests still owned by various clans.

ANCIENT EAGLE HUNTS

The ancient method of hunting wild creatures is a most instructive chapter in Hopi ceremonial customs, and merits special treatment. Particularly complicated were the antelope hunts which, of late years (since this animal has diminished so greatly in numbers), have been practically abandoned. Rabbit hunts are still more or less popular, and they retain a semblance of their ancient ceremonial character; but even these are declining, as they are now only fairly successful.

The eagle was doubtless the only bird which was systematically hunted by the Hopi in ancient times, but the methods formerly employed have passed into legendary history.

The ancient *kwamakto*, or eagle hunt, was accompanied with ceremonial rites, as were antelope hunts a few generations ago, and as are the rabbit hunts which still frequently occur. The method of conducting these ancient eagle hunts is said to have been as follows:

On a distant mesa northeast of Walpi, but in full view of that pueblo, there is a small circular inclosure, about four feet high, built of stones and called by the Hopi the *kwamaki*, or eagle-hunt-house. The hunter hid himself in this inclosure, having previously tied dead rabbits as a bait to the beams overhead.

Several features of these ancient inclosures, or *kwamaki*, in which the Hopi hunter of eagles hid himself to capture these birds, recall the small stone towers so common in some parts of the southwest, especially along the Colorado and its tributaries. These towers, as a rule, are small; they are situated on elevated sites, and bear little evidence of long-continued use as human

habitations. They are not large enough for permanent dwellings, and the theory that they were employed as outlooks is not wholly satisfactory; nor are they capacious enough for the defense of any considerable number of persons. It is therefore suggested that they were *kwamaki*, or eagle-hunt-houses, of the former inhabitants of the region. Many are situated on crags which are known to have been frequented by eagles, and we have the assertion of the Hopi that there were many eagle-houses in the north.

As in all Pueblo customs, these eagle hunts were accompanied by certain prescribed usages or rites.¹ The hunter first washed his head as a bodily purification, and deposited a prayer-offering in a shrine at or near the eagle-house. After these preliminaries, he stationed himself in the eagle-house and began to sing, accompanying his songs with low calls. Soon an eagle, attracted by the rabbits tied to the logs, circled about and finally alighted on the beams above him, when its leg was seized by the concealed huntsman and the bird was drawn into the inclosure. Other ceremonies followed, concerning which there is little information; but at each eagle-hunt one of the birds was always released after a prayer-stick had been attached to its leg, it being supposed that the eagle thus freed would return to its comrades, bearing the hunter's prayer. The eagles captured by the methods described were not killed, but were carried to the pueblos.

The attachment of a prayer-stick to the leg of the eagle before being released is in harmony with present Hopi practices. During the *Soydlwña* ceremony, for instance, prayer-emblems are tied to the tails or manes of burros and horses, and to the tails of chickens, turkeys, dogs, cats, etc.; it is the same thought which the people of old Wúkoki had in mind when they ceremonially buried the parrot, of which mention has been made; and a similar belief led to the burial of prayer-sticks with the human dead — they were expressions of prayer to the gods.

¹ The Hopi have a special hunters' *tiponi*, called *makilponi*.

PRESENT METHOD OF CAPTURING AND UTILIZING EAGLES

Eagle hunting in the manner described has been abandoned within the memory of some of the older men of Walpi; when eagles are now required the young are taken from their nests after certain ceremonies and offerings. It is regarded as wrong to take all the young from the nest at any one time, and it is evidently due to this taboo that the perpetuation of the species in Tusayan is effected. The captured eaglets are taken to the pueblos, where their heads are washed and sprinkled with prayer-meal — a form of purification found in all Hopi ceremonies.¹

After this purification the feathers are plucked from the eaglet and the bird is killed, life being crushed out by pressure on the sternum without the shedding of blood. The body of the eagle thus killed is not cast over the mesa side on the pile of débris at its base, but is buried in a special eagle cemetery, near the pueblo, where many skeletons of these birds may be seen. This burial place is a cleft in the top of the mesa south of Walpi on each side of the trail, near where the latter descends to Kisakobi, one of the sites of Old Walpi. The dead eagle is deposited with prayers in this cleft, and above the remains are placed a few stones, but not enough to cover them. After the celebration of the *Nimán*, one of the Hopi festivals, there are placed in these eagle graves small wooden effigies or dolls, and miniature bows and arrows,² upon which sacred meal is scattered. I have never witnessed one of these burials, but have frequently visited the eagle cemetery, and reliable members of the tribe have repeatedly informed me of the nature of the ceremonies performed at the time of burial. So far as known, the eagle is the only non-human creature for which the Hopi have a special burial place.

From what has been said it would appear that the ownership

¹ Compare the ceremony of washing the snakes in the Snake dance; *American Anthropologist*, vol. XI, 1898, pp. 313-318.

² In this same festival the *kutšines* who participate give dolls to the little girls, and bows and arrows to the boys.

of eagles by the Hopi (or their domestication of the same, if that be a proper term to apply to animals under such a condition) was largely for ceremonial purposes. In the case of the turkey, the bird or the eggs may have been used also for food; the parrot and the eagle, however, were kept solely for their feathers.

We find among the Hopi an Eagle clan; there are evidences also of a Parrot and a Turkey clan. It is possible that a taboo against killing these birds may have once been in force, as is the case among the Snake priests with reference to the killing of rattlesnakes and other ophidians. The eagle, however, is now killed notwithstanding the existence of an Eagle clan, although the manner in which the bird is killed is strictly prescribed.

PRAYERS FOR THE INCREASE OF EAGLES

Soydluñá, the Winter Solstice ceremony, is a prayer directed particularly to Muiñwu, the Germ god, for the increase of all worldly possessions. At the time of its celebration a special offering is presented for the increase of eagles which is quite different from that made in behalf of the strictly domestic animals. During the *Soydluñá* rites such of the priests as desire sheep, oxen, burros, and horses, make small clay figurines of the same to which they tie feathers—the symbolic prayer. These figurines are deposited in places frequented by these animals; thus, the image of the sheep is placed by a man in a niche in his corral.

In the case of the eagles, however, a special form of offering, called a prayer-stick, is carved of wood, ovoid in form, and painted white with spots in imitation of eagle eggs; to these symbolic prayers in the form of feathers are tied, as in the case of the figurines of truly domestic animals. There are several shrines in which these artificial eagle eggs are deposited, one of the best-known of which is near the old ruin of Turkinobi, situated on East Mesa not far from the twin pyramidal mounds above Sikyatki. In this depository, which is called the eagle shrine,

two of these artificial eggs were placed during the *Soydluna* ceremony performed in 1899.

THE HOPÍ DOMESTICATED DOG

The Hopí had a domesticated dog in early times, as is shown by skulls and fragments of skeletons that have been excavated from ancient ruins and graves. This dog was of a breed¹ superior to the half-coyote curs now so abundant in Tusayan. The desiccated remains of dogs found near the Little Colorado ruins show that they were of fairly large size, with reddish hair, recalling a northern variety. There is no knowledge of the ceremonial treatment of the dog by the Hopí, and it does not appear to have been used as a beast of burden as among some of the Indians of the plains.

The dog figures in some of the Hopí legends, but not in the most ancient. According to the traditions of the *Pakab* clan, this animal was brought to Tusayan from Jemez, probably after the destruction of Awatobi. Insignificant though the cause may seem, yet to this animal was due the abandonment of the *Pakab* pueblo under the Middle Mesa.

There is a pictograph of a dog (figure 79),² which has every appearance of antiquity, near the site of Old Walpi. The story of this pictograph, briefly related, is as follows: In old times the Oraibi villagers made a raid on the Walpi cornfields, and the women rushed down the mesa to defend their farms. They were aided by a faithful dog which bit the Oraibi warriors and held them until they were killed. The dog, however, was also slain, and the pictograph marks the site of the deed.

OTHER DOMESTICATED ANIMALS

No evidence has been found in ancient Hopí ruins that animal fibers were used in weaving, and although this absence would in-

¹ As shown by Dr. F. A. Lucas, *Science*, vol. v, No. 18, 1897.

² This pictograph represents a maiden with a shield on which are depicted feathers and other designs, and a dog with the heart and the eyes represented. The girl is shown with protuberances on the sides of her head representing the characteristic coiffure of Hopí maidens.

dicates that wool-bearing animals were formerly unknown, the testimony is only of a negative kind. The Indians reported to the first Spanish travelers in northern Mexico and the adjacent territory that the people of Totonteac (a province evidently situated south of the present Tusayan) had an animal which yielded

hair or wool not unlike that of which the cassock of Marcos de Niza was woven; but this animal has not been satisfactorily identified. Cushing found in the ruins of the Gila-Salado drainage area certain figurines and pictographs which he ascribed to some guanaco-like animal, but, so far as known, no feral representative of a mammal



FIG. 79—Pictograph of dog and maiden with shield.

of this description occurs in the fauna of the region.

The domesticated animals which the Hopi now possess are descendants of those introduced by the whites. Among these may be mentioned the horse, burro, sheep, chickens, and cattle. These creatures have had greater influence than all others in modifying the condition of these people; but it was an influence from without rather than one due to internal growth, for the fauna of their arid habitat was too meager to furnish them a valuable domestic animal for either food or clothing.

CONCLUSIONS

When "discovered" by the whites, the Hopi were in an early stage of the development of zoöculture, the nature of which may be seen in the relations between the people and their eagles.

With regard to animals as an aid in the food-quest, the Hopi were but little above the hunter stage; they considered certain tracts of land as the range of their respective clans, over which the members alone had a right to hunt, but had not yet domesticated individual animals or their young for food. Adult eagles were ceremonially captured. A knowledge that the eagles were not nomadic in their habits, and that eaglets consequently grew to maturity and died near or on the same crags as their parents, led the Hopi later to claim individual birds and to capture their young as he would gather his corn or peaches.¹

Birds were among the first animals to which property-right attached among the Hopi, and of these the more important were the eagle, the turkey, and the parrot. These birds were used for religious purposes rather than as food, and the parrot and the turkey were probably kept in the pueblos. The eagle, however, was allowed to remain at large in its feral condition and captured only as needed. Unlike other wild animals, eagles and eaglets, with their nests, were the property of the clans. Ownership of eagles descended through the clan in the maternal line, and the present geographical distribution of eagle-nests is directly connected with clan migration. The treatment of the eagle after capture — its killing and ceremonial burial — is a survival of an ancient custom, probably paralleled in the case of the parrot and the turkey.

The ancient Hopi had a domestic dog which was a pet rather than a beast of burden. The good qualities of this pet were recognized and recounted in their legends. The Hopi domesticated no animal for food or raiment before the advent of the Spaniards, nor did the territory occupied by them furnish any mammal capable of domestication. Unaided they might have advanced in culture, but not through a pastoral stage.

Among most peoples the food-quest has come to be an

¹ Peach trees among the Hopi are owned by individuals, but it by no means follows that a man owns the ground on which his trees are planted.

incentive for the domestication of animals; but when the Pueblos were discovered their meager zoöculture was not for food, nor even for clothing, but for religious purposes—the adornment of ceremonial objects with feathers or the decoration of dance paraphernalia. Is it not possible that before man domesticated animals for the purpose of augmenting his food supply, he kept certain of them in confinement for religious purposes, and that some of these were found to be valuable in material ways—so docile that they could be employed as beasts of burden, possessed of a pelage that could be utilized as raiment, or of udders for yielding milk, etc.? When these benefits were recognized, the domestication of animals became a feature of the food-quest which the Hopi never attained until after the advent of the white man.

SKETCH OF THE KWAKIUTL LANGUAGE¹

By FRANZ BOAS

In the course of a series of investigations undertaken for the Jesup North Pacific Expedition, I collected extensive material on the language of the Kwakiutl Indians, who inhabit northeastern Vancouver island and the adjacent coast of British Columbia. A treatise on the grammar of this language, by Rev. Alfred J. Hall, was published in 1889;² but the author has not succeeded in elucidating its structural peculiarities. I published a brief sketch of the grammar in the Reports of the Committee on the Northwestern Tribes of Canada, appointed by the British Association for the Advancement of Science.³ While the data given in these sketches are in the main correct, the fundamental traits of the language have hitherto remained unknown.

The phonetic system of the Kwakiutl is very rich. It abounds particularly in sounds of the *k* series and of the *l* series. The system of consonants includes velars, palatals, anterior palatals, alveolars, and labials. The palatal series (English *k*) seems to occur only in combination with *u* articulations. In most of these groups we find a sonans, surd, fortis, and spirans. The sonans is harder than the corresponding English sound. The surd is pronounced with a full breath, while the fortis is a surd with increased stress and suddenness of articulation. The sonans is so strong that it is very easily mistaken for a surd. Besides the groups mentioned before, we have a series of lateral linguals or *l* sounds; the laryngeal catch; *h*; *y*; and *w*.

¹ Published by authority of the Trustees of the American Museum of Natural History, New York.

² A Grammar of the Kwakiutl Language, *Trans. Royal Society of Canada*, 1888, II, pp. 57-105.

³ *Report of the Sixtieth Meeting of the B. A. A. S.*, 1890, pp. 655-668; also 1896, pp. 585, 586.

This system may be represented as follows:

	Sonans	Surd	Fortis	Spirans	Nasal
Velar	ʒ	q	q!	x	—
Palatal	g(w)	k(w)	k!(w)	X	—
Anterior Palatal	g'	k'	k'!	x'	—
Alveolar	d	t	t!	s	n
Dental	dz	ts	ts!	—	—
Labial	b	p	p!	—	m
Lateral	ɾ	ɽ	ɽ!	ɬ	—
Laryngeal catch	ʔ				—
	h, y, w.				

The velar series are k sounds pronounced with the soft palate. x corresponds to ch in German *Bach*. The palatal series correspond to our g (hard) and k. X is like x, but pronounced farther forward. g' and k' sound almost like gy and ky (with consonantic y); x' is the German ch in *ich*. d, t, and s are almost dental. ɾ, ɽ, and ɽ! are pronounced with tip of tongue touching the lower teeth, the back of the tongue extending transversely across the hard palate, so that the air escapes suddenly near the first molars. In ɾ the tip of the tongue is in the same position, but the back of the tongue is narrower, so that the air escapes near the canine teeth. The sound is at the same time slightly less explosive than ɽ. ɬ is the same as the English sound. ʔ is a very faint laryngeal intonation. The exclamation mark is used throughout to indicate increased stress of articulation.

The vowels seem to be quite variable. The indistinct e is very frequent. The two pairs i e and o u probably represent each a single intermediate sound. The whole series of vowels may probably be represented as follows:

e
i e, i, ê, a, ô, o u
i ê, — ä, ä, ä, ö ü

There are a considerable number of rules of euphony which govern the sequences of sounds. The u vowels do not admit of a following anterior palatal, which is changed into a palatal with

following w; for instance, ʔá'wayō-g'a *this salmon-weir*, becomes ʔá'wayōgwa. aa is often contracted to ā; for instance, ǝ^hma-a *that chieftainness*, becomes ǝ^hmā. oa is contracted to ǝ; for instance, ʔá'wayō-a *that salmon-weir*, becomes ʔá'wayō. It seems that combinations of consonants do not occur in the beginning of words. Extensive clusters of consonants are rare, and even combinations of two consonants are restricted in number. The first sound of such a combination is generally a spirans, nasal, l or ʔ, all of which are produced by stricture, not by closure. k sounds, which in the process of word-composition become first sounds of combinations of consonants, are aspirated; l sounds become ʔ. When, in the process of composition, inadmissible combinations of consonants occur, the second consonant is often dropped. Terminal consonants of words, when followed by words with initial consonants, are often modified in the manner here indicated. From g-ók^a *house*, is formed g-ókX^a dzē *large house*; from ^anēk^a *to say*, ^anē'x'sō *he is told*. Instead of laa'ml mē'x^aēl *then he will sleep*, we have laa'm ʔ mē'x^aēl. Examples of dropping of consonants are the following: qá's-x^aid *he begins to walk*, becomes qá's'id; Wá'k'lēqēs-x^ala *named Wá'k'lēqēs*, becomes Wá'k'lēqēsla.

Suffixes influence the terminal sounds of stems, which they often harden or soften. When softened, surd and fortis are transformed into the sonans of the same series; when hardened, sonans and surd are transformed into the fortis. s softened becomes dz or y; hardened, it becomes ts!. x^a softened and hardened becomes n; Xw softened and hardened becomes w. ʔ softened and hardened becomes l. n, m, l, y, w, when softened, become sonant by being preceded by the laryngeal catch. The following examples will illustrate these processes:

Stem	Softened	Hardened
ʔlaqw-, <i>red</i>	ʔla ^a ʔw-atō, <i>red-eared</i>	ʔla ^a q!w-ǝbō, <i>red-breasted</i>
hanl-, <i>to shoot</i>	ha'n!-as, <i>place of shooting</i>	ha'ni!-āla, <i>noise of shooting</i>
qas-, <i>to walk</i>	qá'y-as, <i>place of walking</i>	qá'ts!-ēnox, <i>walker</i>

Stem	Softened	Hardened
míx', to strike	mén-a'ts!é, <i>drum=striking receptacle</i>	mé'n ² xst, to strike <i>hind end</i>
séXw-, to paddle	sé'w-ayu, <i>paddle</i>	sé' ² w-énox, <i>paddler</i>
ts!ó'l-, black	ts!ó'l-is, <i>black beach</i>	ts!ó' ² l-a, <i>black rock</i>
*wun-, to hide	*wu ² n-íl, to hide in the <i>house</i>	*wu ² n-a', to hide on <i>rock</i>
dé'nxsl-, to sing	dé'nxsl-as, <i>place of singing</i>	

Grammatical relations are expressed by means of suffixes and by reduplication. Suffixes affect the word to which they are attached in different ways. A considerable number are attached to the terminal sound of the word, without causing any modifications of the same, except such as are required by the rules of euphony. To this class belong almost all pronominal, temporal, and conjunctive suffixes. Another group of suffixes is attached to the stem of the word, which loses all its word-forming suffixes. It is probable that all nouns are compounds of a stem and of a number of suffixes. The latter disappear entirely when the noun is combined with one of this class of suffixes, and we observe apparently an apocope of the end of the noun, while actually its stem reappears freed from its suffixes. At the same time, the suffix often modifies the terminal consonant of the stem. Thus we have *bégwá'nem man*, stem: *bégw-*, and from this *bék!u's man in the woods*; *met!á'nē clam*, stem: *met!*, and from this *medā'd having clams*. This process is analogous to what has been observed in many Indian languages, and has been termed "decapitation" or "apocope." From the instances with which I am familiar, I am inclined to believe that a thorough knowledge of the process will prove that the apparent apocope is due either to laws of euphony, or to the dropping of affixes, as in the case here described.

Other changes of the stem are due to reduplication, the method of which varies according to the grammatical function it performs. Double or even triple reduplication may occur in the

same word; for instance, from the stem *begw-man*, we have *bā'bagum boy*, and *bā'bēbagum boys*.

In discussing the groups of relations expressed by grammatical processes, we will take up first those relating to the person speaking, or the pronominal relations. The language has a strong tendency to define every action and every object in all its relations to the persons conversing. These relations are expressed by the personal, demonstrative, and possessive pronouns. The homology between demonstrative and personal pronouns is here perfect. The personal pronoun indicates the person acting or acted upon, as speaker, person addressed, and person spoken of; the demonstrative indicates the location of an action or of an object as near the speaker, near the person addressed, or near the person spoken of. This strict homology appears in many American languages, but in few is the expression of location so rigidly demanded as in Kwakiutl. The location of object or action in relation to the three persons—speaker, person addressed, and person spoken of—must always be expressed. These three positions are further subdivided into two groups, the one expressing objects and actions visible to the speaker, the other expressing those invisible to the speaker.

Location near	1st Person	2d Person	3d Person
Visible to speaker	-k'	-x	—
Invisible to speaker	-g'a	-ŋ!	-a

Personal pronouns appear mostly incorporated in the verb. The pronominal form, which we designate as "first person plural," is not a true plural. Plurality implies the presence of several individuals of the same kind. A plurality of speakers is seldom possible; but our "we" expresses either "I and thou," or "I and he." It is therefore not surprising that many languages, and among them the Kwakiutl, use distinct forms for these two ideas. On the other hand, the second and third persons plural are real plurals, and are designated in Kwakiutl by a suffix, -x'da²x'.

which precedes the pronominal ending. In the Hē'iltsaq^a dialect this plural is expressed by reduplication.

The personal pronouns have separate forms for expressing their syntactic relation in the sentence; that is to say, there are pronominal cases. These are the subjective (nominative) and objective (accusative).

	1st Person	2d Person	3d Person	Inclusive	Exclusive
Subjective	-en	-es	-	-nts	nu ^a X
Objective	-	-öl	-q	-	-

A number of secondary cases are derived from these primary forms,—a locative from the objective, an instrumentalis and finalis from the subjective.

	1st Pers.	2d Pers.	3d. Pers.	Inclusive	Exclusive
Locative	g'ä'xēn	löl	laq	g'ä'xēnts	g'ä'xēnu ^a X
Instrumentalis	(-en?)	-ös	-s	(-ents?)	(-enu ^a X?)
Finalis	qa ^a n	qa ^a s	qaē	qa ^a nts	qa ^a nu ^a X

The old objective of the first person, which occurs in the Hē'iltsaq^a dialect, is entirely lost, and replaced by the locative. The instrumentalis of the second and third persons is identical with the possessive. I have not found any unquestionable forms of this case for the first person.

The forms of verbs with incorporated object are derived by combinations of the above forms in the order subject, direct object, indirect object (locative), instrumentalis, finalis. It seems that the first person singular had an older form, -enL, which is still used in the Koskimo dialect, and which persists in all forms in which the subject first person is followed by another pronominal form. An example of verbal forms with incorporated object and instrument is mix^at'daqs *he struck him with it*, from mix^at'd *to strike*, -aq *him*, -s *with it*. When substantives are introduced in a sentence of this kind, they are placed following the pronoun which indicates their function. At the same time the pronoun is modified. For instance, mix^at'dēda begwā'nēmaqs *the man struck him with it*; mix^at'dēda begwā'nēmaxa g'inā'nēms *the*

man struck the child with it; mix-^{*}ŋ'dēda begwā'nEmaxa g'ŋā'nEmša tle'sem *the man struck the child with the stone*.

The terminals da, xa, and sa might be interpreted as nominative, accusative, instrumentalis of an article, if it were not for their intimate connection with the preceding verb. The pronominal object and the instrumentalis at the end of the subject in our first example also show that we have here really an incorporation of the noun in the verbal expression. The terminal a, which characterizes the subject followed by an object (like the terminal a in begwā'nEma of our example), must be explained as the retained a of the compound pronominal ending -sq (as in mix-^{*}ŋ'daq), and seems to me one of the strongest proofs of our interpretation. The connection between subject of the first person and object elucidates the same point: mix-^{*}ŋ'dEnLaq *I strike him*, where -La- is inserted between the subject first person -En and the pronominal object -q; and mix-^{*}ŋ'dEnLaxa g'ŋā'nEm *I strike the child*, which form is strictly analogous to the form with pronominal object. The nouns which form subject, object, indirect object or instrumentalis in the sentence always enter the verbal expression in their full form. They do not lose their word-forming suffixes, as they often do in composition with various other classes of suffixes.

The construction of the sentence is therefore analogous to that found in other American languages, most of which incorporate object and indirect object, although the degree and character of incorporation vary. Mexican and Kootenay embody the object freed of its word-forming affixes, and often replace it by the pronominal object. Chinook, Sioux, and many other languages incorporate only the pronominal representative in the verb, and place the noun as apposition at the end of the sentence. Kwakiutl pursues the same method as Chinook, but, instead of placing the nouns as appositions, it places them immediately following the representative pronoun, thus creating a word-complex held together by pronominal particles.

The phonetic development of the pronoun, when placed before a noun, has two series of forms, a definite and an indefinite. The former are *da, xa, laxa, sa, qa*; the latter, *-, x, lax, s, q*. The use of the indefinite is, however, much more restricted than that of the corresponding forms in English. The indefinite forms are also used preceding proper nouns.

The language has a strong tendency to combine the possessive pronoun, which ordinarily appears as a suffix, with the pronominal suffixes just referred to, so that they form a phonetic unit, meaning, *he my, he thy, etc.* From *BENE'm wife*, we have *BENE'men my wife*; but **nē'k'EN BENE'm said she-my wife*, **nē'k'ēxēs BENE'm said he-to-his wife*. In the second person the pronoun is repeated as a suffix to the noun; in the third person it is combined with the pronominal suffix when subject and possessor are identical, it is suffixed to the substantive if they are distinct.

- *nē'k'EN BENE'm my wife said, *nē'k'ēxEN BENE'm he said to my wife.*
**nē'k'ēs BENE'mōs thy wife said. *nē'k'ēxēs BENE'mōs he said to thy wife.*
**nē'k'ēda BENE'mas his wife said, *nē'k'ēxēs BENE'm he said to his (own) wife.*
**nē'k'ēx BENE'mas he said to his (the other man's) wife.*

Our conjunction "and," and interrogative and a number of demonstrative pronouns are treated in the same manner. This phenomenon is evidently closely connected with the tendency of adverbs and auxiliary verbs to take the subjective ending of the verb, while the object remains connected with the verb itself. *k'lē'sEN dō'qoaq not-I see-him*, shows the characteristic arrangement of sentences of this kind. The pronominal elements always take the terminal place in the verb.

Moods, in the proper sense of the term, are very slightly developed. Here might be classed some of the verbals to be discussed later (page 718), the imperative, and the conditional. The imperative is indicated by the stem of the verb, or by

imperative suffixes, such as -g'a, inchoative; -la, continuative. -x followed by pronominal endings forms an exhortative. The conditional is expressed by the suffix ô: qa^ssô lâ'lax *if you should go*.

The verb generally consists of a stem and numerous adverbial suffixes, which modify or limit the meaning of the verbal stem. These adverbial expressions may be limitations of time, of cause, of manner, of object. They embrace, therefore, our tenses, conjunctions, adverbs, and even objects or prepositional expressions. The lack of distinction in the method of expressing grammatical relations and material ideas, which is found in most Indian languages, manifests itself in the variety of ideas expressed by these suffixes.

There are four temporal suffixes which are used with verbs as well as with nouns. Words without suffix represent an aorist or historic tense which is indefinite as to time. Three suffixes designate past tenses: -u|, -x^sid, -x'dê. -u| designates the remote past, -x^sid the recent past, and -x'dê the transition from present to past. The limits between -u| and x^sid are not distinct. The usage depends upon the period with which the time elapsed is generally compared. In speaking of last year's salmon-run, it is compared to the period between two fishing seasons, so that half a year is considered remote past. In speaking of the death of a person, the time elapsed since the death is compared with man's life, and therefore -u| is not used until five years or more after death. The words for yesterday and day-before-yesterday contain the ending -u|, and consequently, when these are used, the verb must take the same ending. The use of -x'dê is quite distinct from the two former tenses. It always implies the transition from existence to non-existence. The future is expressed by the suffix -l. All the temporal suffixes are attached to the full word.

A number of derivational suffixes may be grouped with those expressing tenses. We find, among others, a desiderative ex-

pressed by the suffix -ēxst, for instance, nā'qēxst *to desire to drink*; a causative -mas, for instance, qā'samas *to cause to walk*; -^snakula implying a gradual motion, for instance, tē'gu^snakula *to hang one after the other* (from tē'kwa *to hang*). The most important forms in this group are the inchoative and the "tentative," which latter expresses the attempt to perform an action.

The inchoative is very frequently used, the continuative form being strictly distinguished from it, as is also the case in the allied Nootka. The continuative of most verbs ends in -a, while the inchoative ends in -x^sid, which ending, however, undergoes many changes according to the rules of euphony. From qā'sa *to walk*, we have qā's^sid *to begin to walk*; from mō'kwa *to tie*, mō'X^swid. The locative suffixes, which will later be mentioned, have separate forms for inchoative and continuative, which are formed somewhat irregularly (see page 718).

The "tentative" is formed by reduplication with long a vowel, and hardened terminal consonant: dā'doqlwa *to endeavor to see*, from dō'qwa, *to see*.

Conjunctive suffixes are numerous. The simple verbal endings described before are used only when the sentence is without inner connection with previous statements—that is to say, when a new idea is introduced in the discourse. That a subject has been referred to before, or that it has been in the mind of the speaker before, is expressed by the suffix -m. gā'xēn *nēmō'kwē means "my friend of whom I have not been thinking has come unexpectedly"; gā'xmēn *nēmō'kwē means "my friend who was expected has arrived." -mēs indicates a very weak causal relation, similar to our "and so"; -gīl is causal, signifying "therefore"; -ta and -tla signify "but"; -xa, "also."

More or less adverbial are the following: -kas *really*; -x'lā *very*; -x'ta *too bad, that*; -x'st! *as usual*; -x'sā *still*; -axōl *and I did not know it before*, a mild expression of surprise.

Locative suffixes are very numerous. Many of them have distinctive continuative and inchoative forms:

	Continuative	Inchoative
<i>in the house</i>	-il	-lii
<i>on the ground</i>	-us	-is
<i>on rocks</i>	-a	-ala
<i>up</i>	-usta	-ustala

Closely related to the locative suffixes are the objective suffixes, which express either the object acted upon or the subject of an intransitive verb. Suffixes designating parts of the body are particularly numerous in this class: -x'lē *head*; -x'tslā'ne *hand*; -bōē *chest*, etc. But others are not wanting: -sqwap *fire*; -sta *water*. Sometimes the suffix may be considered as expressing a local relation rather than an objective one; but it never expresses an instrumental relation, as is the case in Siouan and Athapascan languages.

A number of suffixes express moods: -lax implies the uncertainty of the conditional; -nē'sɿ the optative "oh, if!" Here we may class the suffix -sō, which expresses the passive.

In this group the series of verbal nouns are particularly remarkable. They are numerous, and in construction always retain their verbal character, governing the pronominal cases that belong to the verb. The most important ones among these are -ēnē*, signifying the abstract noun; for instance, k'ē'lak'lēnē* *the clubbing*. This verbal occurs only with the possessive pronoun. It is used very frequently to express the intentional when it is preceded by the particle qa *in order to* or *for*.

The indefinite verbal, which does not differ from the simple form of the third person singular without demonstrative ending, is very frequently used to express subordinate clauses, particularly causal and temporal subordination. The verbal is then expressed in the objective case, takes the possessive suffix, and besides this the demonstrative form peculiar to each person. The following example will make this clear:

a'l²em yō'X²widexg'in g'ā'xik' *the wind just began to blow when I came.*
 a'l²em yō'X²widexs g'ā'xaaqōs *the wind just began to blow when you came.*

ā'ṭ^{em} yā'X^{wid}xs g'ā'xāē the wind just began to blow when he came.
(ā'ṭ^{em} lately, yā'X^{wid} to begin to blow, g'ā'x to come.)

Other verbal nouns are -k^a, a passive participle and noun; as g'ilō'ṭik^a a thing stolen; -anEm obtained by, as g'ilō'tanEm obtained by stealing (from g'ilō'La to steal); -ayu instrument, as dō'gwayu trolling-line (from dō'kwa to troll); -Em instrument, as k'ilē'm net (from k'ilā' to fish with net); -ēnox nomen actoris, as g'ilē'nox wood-worker (from g'ita' to do work in wood); and many others.

The suffix -ayu instrument sometimes expresses a passive, particularly of intransitive verbs: qā's^{id}ayu he was the means of walking, i. e., he was walked away with by somebody.

There are also a considerable number of suffixes which transform nouns into verbs. The possessive verb is used so frequently that it gives the language a peculiar character. It is formed by suffixing -ad to the stem of the noun, which loses all its suffixes. ʒEāE'm wife has the stem ʒEg- and, therefore, the Kwakiutl form ʒEg'a'd having a wife. nEXusk'i'n a berry has the stem nEX- and, therefore, nEwa'd having berries.

To eat a certain object is expressed by the reduplicated stem of the noun; from nEXusk'i'n berry, nEXna'X^a. This derivative, however, is exceedingly irregular. -ōL to obtain, -sila to take care of, -g'ila to make, are examples of other derivatives.

Among the categories expressed by grammatical processes we have to mention those of plurality and diminution. The plural seems to have been originally a distributive. It is expressed by reduplication, as bEgwā'nEm pl. bē'bEgwanEm man, g'ōk^a pl. g'ig'ō'k^a house. There is a decided preference for the use of the long ē in the reduplicated syllable. All substantives designating human beings have plural forms, while many other words have no reduplicated plural. Words with local suffixes form their plural with the suffix -Em, which probably has a collective meaning, designating a group of individuals: g'ilg'ilala pl. g'ilē'mg'ilala to walk on rocks. Diminutives are formed from nouns with a vowel in the reduplicated syllable, softened terminal consonant, and the

suffix -em: g'ök house, g'a'g'ogum *small house*; mē'gwat *seal*, mā'megwadem *small seal*.

Numerals are formed on the decimal system. They take classifying suffixes, the most important among which are those for designating human beings, round objects, long objects, and flat objects. The classification of nouns and verbs in regard to their form is also found in words denoting existence. These have separate forms for round, long, flat, and soft objects.

In conclusion I will give a few lines of texts with grammatical explanation:

G'ō'kula ² laēda ¹	g'a'lāsa ²	Dzā'wadēnoxwē ²	lā'xa ²
The village was it is said the	first of the	Dzā'wadēnox ²	at the
¹ ne'ldzās ⁴	wāls ⁴	Gwa' ² ēxa ²	te'badēs ²
upper course of	the river of	Gwa' ² ē the	having name of
² Wā, ² lā' ² laē ²	ā'la pā'lēda ²	² wā'laixema ²	Wā, ² lā'm ² laē ²
Well, then it is said was	really hungry the	great tribe.	Well, then it is said
hē'menajaem ²	² nemō'kwēda ²	pō'sdanāxa ²	² nē'nā'la ²
always	one	died of hunger the	days.
lā' ² laē ²	yā'q'ēg'alēda ²	² nemō'kwē	lax ²
then it is said	began to speak the	one	among
Qa'wadilišala ²	lā'xēs ²	g'ō'kulōte ²	Lā' ² laē ²
Qa'wadilišala	to his	tribe.	Then
wā'entsōs ²	hō'lēla	g'a'xen ²	g'ō'kulōt ²
(do)	listen	to me,	tribe,
šwā'laasg'asg'in ²	nā'qēk ²	qa' ² n	yā'q'ēg'alēsg'a ²
this kind of this my	this mind.	that I	begin to speak of this

¹ g'ök² house; -la continuative verbal suffix; -²la quotative; -ē pronominal ending pointing to following noun; -da pronominal subjective ending pointing to following noun.

² g'a'la first; g'a'lā contraction of g'a'la-a terminal *a* indicating absence; -sa possessive ending indicating following noun.

³ dzā'Xun olachen (a fish); -ad having, requires the dropping of the formative suffix -nn in dzā'Xun and softens the terminal X to w; -ēnox² people of; -ē demonstrative suffix.

⁴ laq at it; with ending indicating following noun, laxa.

⁵ ā contracted from a-a, see²; -s possessive ending.

* -xa pronominal objective ending pointing to following noun.

* ʔé'qəm, stem ʔéq - name; -ad having, see ²; -s possessive.

* bē'x'a to phosphoresce; -ad having, see ²; -ē demonstrative suffix.

* A conjunctive interjection.

¹¹ la, conjunction 'then,' treated in Kwakiutl as an intransitive verb; -¹²la quotative; -ē demonstrative suffix.

¹¹ pāla hungry, starving; -ēda see ¹.

¹¹ wā'las great; -sēm a group of individuals.

¹¹ lae'm from la then; -m indicates that the subject of the discourse, namely the starvation, has been referred to before; -¹²la quotative.

¹¹ -m see ¹¹.

¹¹ nēm one, -ōk² classifying suffix indicating persons; -ēda see ¹.

¹¹ pō'sdāna literally too hungry, from pō'sqa to feel hungry; -xa objective pronominal ending, which form is used for all expressions of time.

¹¹ nā'la day, reduplicated plural.

¹¹ yā'qant!ala to speak, inchoative yā'q'lēg'at; these contain the suffixes -k'āla and -g'at, noise and beginning of noise.

¹¹ lax to, -ēs his, the form laxēs means to his own, while lax g'ō'kulōtēs would mean to the other man's tribe.

¹¹ g'ōk² tribe, -lōt companion.

¹¹ ya oh, -x'da²x² pronominal plural suffix of second and third persons.

¹¹ Exhortative of wā, see ¹.

¹¹ g'a'xen locative of first person personal pronoun.

¹¹ qā²n finalis of first person personal pronoun.

¹¹ -s instrumentalis; -g'a demonstrative, signifying this near me invisible.

¹¹ ʔwā' thus, as referred to; -as place of; hence ʔwā'jaas the place referred to, the manner referred to; -g'a this near me invisible; -s genitive; g'in this mine near me.

¹¹ nā'qē mind; -k' this near me visible.

Free translation.—The first Dza'wadzēnox² lived on the upper course of the river Gwa'ē at a place named 'Having Phosphorescence.' The people of the great tribe were really hungry. Every day some of them died of hunger. Then one of the speakers of Qa'wadilišala began to speak to his tribe and said: "Listen to me, my tribe; I will say what I am thinking."

A MAZAHUA CATECHISM IN TESTERA-AMERIND HIEROGLYPHICS

By NICOLAS LEÓN

Translated by F. F. HILDER

M. Aubin, in his interesting *Mémoire sur la Peinture Didactique et l'Écriture Figurative des Anciens Mexicains*, applies the term "escritura testeriana" to the iconographic mnemonics formed by the Nahuas after the conquest for the purpose of learning and recalling to memory the Christian prayers taught to them by the missionaries. Such a designation appears to us to be improper, and this is demonstrated very clearly by the narratives of the old chroniclers Mendieta and Torquemada.

Father Jacobo de Testera, having become impatient at his inability to instruct the natives, in consequence of his ignorance of their language, availed himself of paintings on linen, which represented the substance of the Catholic doctrine; and spreading them before their eyes, he caused an intelligent native, who had been instructed by him, to explain them, interpreting what he had said.

It appears that this proceeding was suggested to the good priest by the natives themselves¹ who previously had used an analogous didactic method. It is therefore necessary to discriminate in this class of writing between what it contains of Amerindian and that which belongs to the Testerman. Torquemada in his *Monarchia Indiana* says:

These good fathers had a method of preaching not less ingenious than elaborate, and very beneficial to these Indians, because it is in conformity with the custom they have of treating a subject by pictures; and it was in this manner: They had painted on a linen cloth the Arti-

¹ *Memorias de Motolinia*, MS.

cles of Faith, on others the Ten Commandments, and on another the Seven Sacraments and such other matters as they desired relating to Christian doctrine. When the pastor wished to preach concerning the Commandments, he hung up, close to the spot where he placed himself to preach, the linen cloth containing the Commandments, at such a distance that with a wand he could point out any part of the cloth which he desired, and in this manner he proceeded to expound the mysteries which they contain, and the will of God which is written and comprised in them. He did the same when he wished to preach on the Articles of Faith: he hung up the cloth on which they were painted, and in this manner explained them clearly and distinctly, and in much the same manner all the Christian doctrine. In all the schools for boys there were used these linen cloths, of which I have obtained several; although those who are now living have no necessity for these pictures, because they are better taught and accustomed to these mysteries, and on account of the abundance of languages which are now understood, of which in general those evangelists were ignorant.

The print contained in the *Rhetorica Christiana* by Valadés, page 111, first edition, 1579, and also the title-pages of the two editions of Torquemada's *Monarchia Indiana* represent this method of teaching.

This mode of procedure, genuinely Testerian, obtained great acceptance among the missionaries of all the religious orders who were engaged in evangelizing in Mexico; thus we see in Davila Padilla¹ that the Dominican Friar Father Gonzalo Lucero carried with him the doctrine of religion painted on some large linen cloths, and on arriving at a town he immediately caused the painting to be hung up so that all might see it. Having awakened a desire to understand it, which the ignorance of the Indians had made difficult, the good teacher took a wand in his hand and with it pointed out the pictures while he explained their meaning. On one cloth he had painted the glory of God enthroned in the highest Heaven, worshiped by angels and revered by saints, among whom were figured several natives; and

¹ *Hist. de la Fund. & Desc. de la Provincia de Santiago de Predicadores de Mexico*, 1625; lib. I, cap. LXXXI.

he explained that they were those who, having received the faith, had lived according to it until death; the angels assisting with various musical instruments and songs of praise signifying the joy of the blessed in the presence of God.

On a similar cloth there was painted the punishment of the damned in the gloomy fire of Hell which, without giving light, burns in that eternal prison where, in sight of horrible demons and various kinds of torment, the wicked atone for the sins which they have committed in this life. There were also depicted in this wretched place male and female Indians who, the preacher explained, were those who had not accepted the faith, and those who, having received it, had broken the commandments and died without repentance.

On another large cloth were painted great waters—signifying the changes and instability of the present life—on which moved two vessels, known to the Indians by the name of *canoas*, carrying very different people by different routes. In one vessel male and female Indians, with their rosaries in their hands and on their necks, journeyed toward heaven, some scourging themselves and others clasping their hands in prayer, and all accompanied by angels who carried oars in their hands to give to the Indians, that they might row toward the glory shown on the upper part of the cloth, the motives for which were painted complementally on the other part. There were also shown many demons who had seized the boat, holding it so that it could not proceed; some were being displaced by the angels and others by the Indians armed with the holy rosary. Some with ferocious countenances persevered in their stratagems, and others, turning away confounded and subdued, availed themselves of the other vessel, where they remained contented and quiet as if it were their own. There sailed in this boat male and female Indians represented as intoxicating themselves with great vessels of wine, others quarreling and killing each other, and still others in immodest attitudes. The angels were flying over this boat, but its miserable occupants

were so engrossed in their amusements that they cast behind them the inspirations which the angels, who extended to them rosaries, brought by divine command. Some of these wretches fixed their eyes and placed their hands on the vases of wine offered them by the demons, and others on the women who were with them. The Indians in this boat rowed with great satisfaction and stubborn strength, demonstrating their eagerness to arrive at the port of Hell, the painting of which was commenced at a lower corner of the cloth and continued to another.

In order to show how a mixed Testarian and Amerindian writing has been formed, we will quote a passage from Acosta¹:

Also they have written after their method, by images and characters, the same orations. And I have seen to my satisfaction in this place the prayers of the Pater Noster, Ave Maria, Creed, and the Confession General in the said Indian method, and it is certain that anyone who sees it will admire it, because to denote the words "I a sinner, I make confession," they depict an Indian kneeling at the feet of a priest, as if he were making confession; and then for the words "the all-powerful God" they depict three faces with their crowns in the form of the Trinity; and for the glorious Virgin Mary they paint a portrait of Our Lady, half length, with a child; and for Saint Peter and Saint Paul, two heads with crowns and some keys and a sword; and in this manner the whole of the Confession is written by images, and when they fall short of images they insert characters, as *En que pegué*, etc.

More explicitly Torquemada writes²:

Many, on account of being of dull intellect, and others on account of old age, were unable to overcome difficulties with it in any manner, and sought other methods, each conforming to the best he discovered. Some depended on counting the words of the prayer, which they learned, with small stones or grains of corn, placing one for each word, or a stone or grain for each part of those which were pronounced separately, one after another; as, when they used this expression or word, "*Pater Noster*," one stone; for "*qui es in Calis*," another; for "*Sanctificetur*," another; until the end of the prayer. Afterward pointing with the finger, they commenced with the first stone, saying "*Pater Noster*," then "*qui es in Calis*," etc.

¹ *Historia Natural y Moral de las Indias*, lib. VI, cap. vii.

² *Op. cit.*, lib. XV.

Others sought another method (in my opinion very difficult, although curious); it was to study the words which in their language conform to and resemble the Latin in pronunciation, placing them on paper in their order, not by written words and formed with letters, but by pictures, and in this manner they were understood by characters. This will be easily comprehended; for example, the word in their language which most resembles the pronunciation of "*Pater*" is *pautli*, which means a small flag, with which they count the number twenty, which is represented by *pautli* and with which they express "*Pater*." For the second word, "*Noster*," the word they have which bears the greatest similarity to it in pronunciation is *nuchtl*, which is the name of the fruit which our people call "tuna" and in Spain "Indian fig"; therefore, to remind themselves of the word "*Noster*," they paint consecutively after the small flag a tuna, which they call *nochtli*, and in this manner they proceed; and some who are not confident of their memory use the same method in their confessions, carrying with them paintings in order to remind them of their sins.

With these quotations I believe the characters and limits of (A) the true Testarian writing, (B) the Post-Spanish Amerindian, and (C) the Testera-Amerindian, are sufficiently described.

Until what epoch were classes B and C in use? It is natural and logical to surmise the extinction of both within a few lustums after their invention, as much by the diffusion of alphabetic writing as by the mutual knowledge of the native and European languages. Among the majority of the tribes of Mexico it so occurred; but in one—the Otomi—it did not, and it is certain that even today the Testera-Amerind writing is in use among them.

The Otomí family, with its derivatives, the Mazahua, Jonaz, and Pame, occupies an extensive portion of the territory of the republic of Mexico; for them the ages have passed in vain, because they have not lost the racial type, the peculiar language, nor their aboriginal customs. The dawn of the twentieth century finds them almost identical with their ancestors of the sixteenth century, it being possible to identify them easily by taking as a guide the texts of the chroniclers of that era.¹ This is not to be

¹ Sahagún, *passim*.

wondered at, inasmuch as their pre-Columbian conquerors themselves were unable to change their moral or physical characteristics.¹

In use among the members of one branch of that great family, the Mazahua, is the document which is here reproduced; but before entering upon an explanation respecting it, I will endeavor to determine the epoch in which it was probably written.

The document in question is a Christian discourse or catechism, traced over the original pages by Padre Geronimo de Ripalda, which shows that it was originally printed about 1616. Our mnemonic text is far from being equal to the primitive text of Ripalda, because it contains at the beginning the phrase "*Todo fiel*," which Ripalda did not write, nor is it found in his catechism until after the year 1771, the epoch in which the illustrious Archbishop Lorenzana printed for the first time the Catechism of the Third Mexican Council, written in the year 1583, and to which work the *Todo fiel* belongs.

If, therefore, until 1771 that text was known, printed, and in the hands of the multitude, it is reasonably deduced that our document dates from that epoch; and in corroboration of this assertion it may be added that the paper on which it is written is relatively modern.

How can we explain the use of this imperfect and difficult recordatory system? This is not difficult. The Indian stocks whose languages lend themselves readily to alphabetic writing quickly abandon hieroglyphics so imperfect and difficult; but this is not so with the Otomi, whose idiom is resistant to our Latin alphabet to that degree that their few printed texts provoked the censure of the Fourth Mexican Council and serious controversies between the professors of that language in that era. If to this be added what M. Aubin relates,² according to the information given him by the Curate Don Francisco Perez, it explains further the reason why, even in our own time, such catechisms are used. Aubin says:

¹ Ixtlilxochitl, *passim*.

² *Op. cit.*

Ces catéchismes en images étaient autrefois seuls tolérés dans la cure du P. Perez, de peur, disait-on, que les naturels ne se corrompissent par le contact des lettres européennes. On y fustigeait même l'Indien qui parlait espagnol.

The annexed illustrations are an exact and complete reproduction of the original manuscript, their bibliographic description being therefore unnecessary.

In it are contained, counting by leaves, the following:

1. The *Todo fiel Cristiano*.
2. *Pater, Ave, and Credo*.
3. Conclusion of the *Credo* and *Salve Regina*.
4. The Decalogue and Commandments of the Church.
5. Sacraments and Articles of Religion.
6. Conclusion of the Articles and commencement of the Works of Mercy.
7. Conclusion of the Works of Mercy and the Confession.
- 8, 9, 10, and 11. Declarations of the "*Nombres señal del Cristiano*," of the Creed, the Decalogue, and the Sacraments—all in questions and answers.

That which is inserted in alphabetic writing is in the Mazahua dialect.

For better explanation the following notes are given:

The adverb "now" is expressed by a hand with a bell which sounds or strikes the hour.

"All" is figured by a heap of human heads.

"All-powerful" by a similar heap of human heads overshadowed by a bird's wing.

"Blessed" is a female figure with a palm in her hands.

"I believe" is a kneeling woman with a rosary in her hand or with a cross, and sometimes with both.

"To suffer" is symbolized by Christ tied to a column.

"From between" is a wing and a half moon.

"And," conjunction, is a hand pointing or signaling, drawn in a horizontal position.

"Virgin" or "virginity" is a woman with a flower.

The ideas of "virginity and divine maternity" are represented by a flowering branch, the blossom of which is surrounded by crosses, a

larger cross, and a half-moon adorned in its convexity with small semi-circles and dots within and without.

"Catholic" is a female figure with both arms outstretched and a rosary in each hand.

"Everlasting" or "eternal" is represented by parallel lines.

The eighth commandment has a representation which is not wanting in the faculty of invention, and in it we believe is seen a pure Testesian figure; it is a human figure from whose mouth issues a tangled cord, with which it attempts to tie another human figure in front of it.

"A sin by word" is signified by the head of a mammal, perhaps a coyote, with the tongue hanging out.

"A sin by action" is represented by a heart surmounted by a human head with horns or perhaps a devil's head.

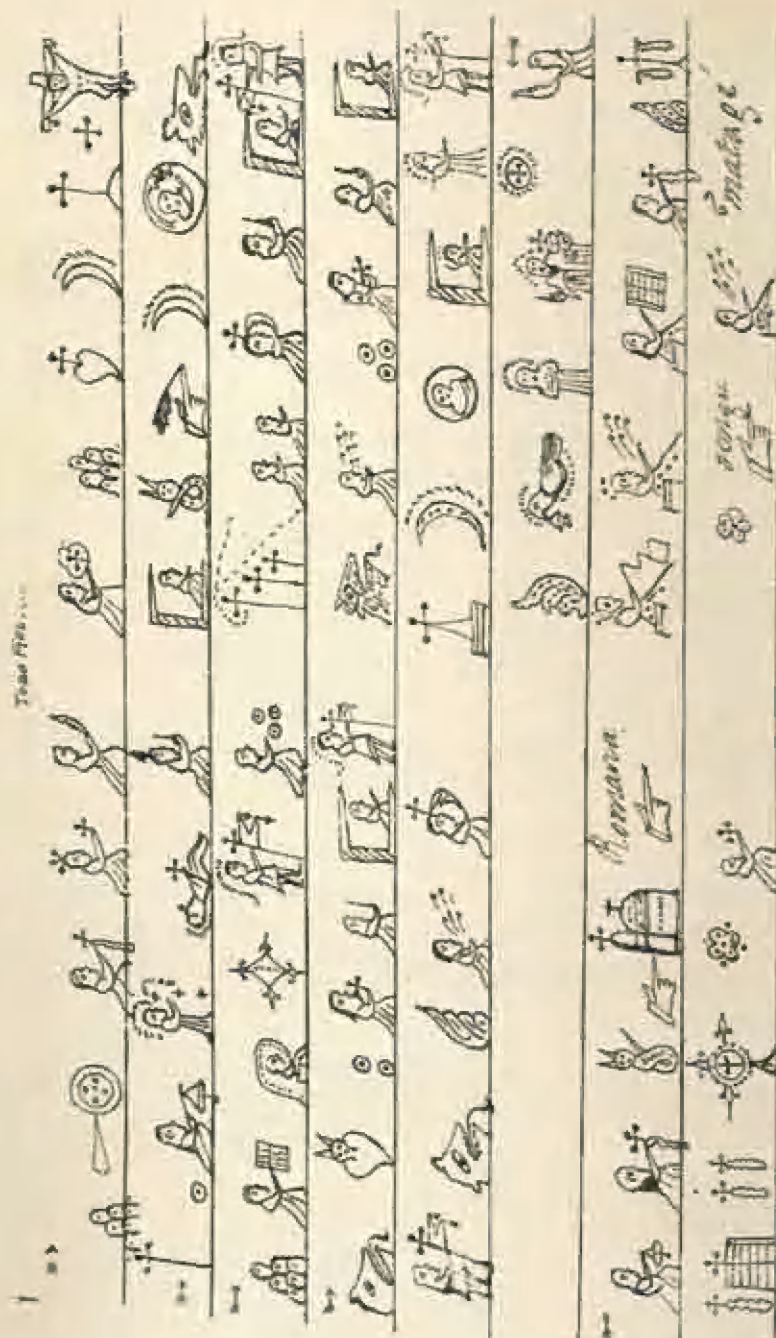
"Amen" is a bird's wing; "Jeaus" a Greek cross. The wing and the cross united express "Amen Jesus."

The identification of the remaining figures is made easy by taking as a guide the *Catecismo de la Doctrina Cristiana* by Father Geronimo de Ripalda.

I am indebted to Sr Don Antonio Peñañel, Director General of Statistics, for the following interesting data:

The States of Mexico in which are spoken the Otomi, Mazahua, and Pame dialects.

States	OTOMI			MAZAHUA			PAME		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Chihuahua.....	1		1						
Durango.....	2	1	3						
Guanajuato....	7	9	16						
Hidalgo.....	42,575	47,894	90,469	3		3	3	3	6
Jalisco.....		2	2						
Mexico.....	27,053	29,014	57,267	158	91	249			
Michoacan....	1,181	1,199	2,380	2,589	2,733	5,322			
Nuevo Leon...	1	2	3						
Oaxaca.....	1	2	3						
Puebla.....	2,717	2,601	5,318						
S. Luis Potosí..	232	250	482				1,375	1,345	2,720
Sinaloa.....				2	1	3			
Veracruz.....	2,553	2,342	4,895						
Dist. Federal...	173	189	362						
Totals.....	77,096	84,105	161,201	2,752	2,825	5,577	1,381	1,345	2,726



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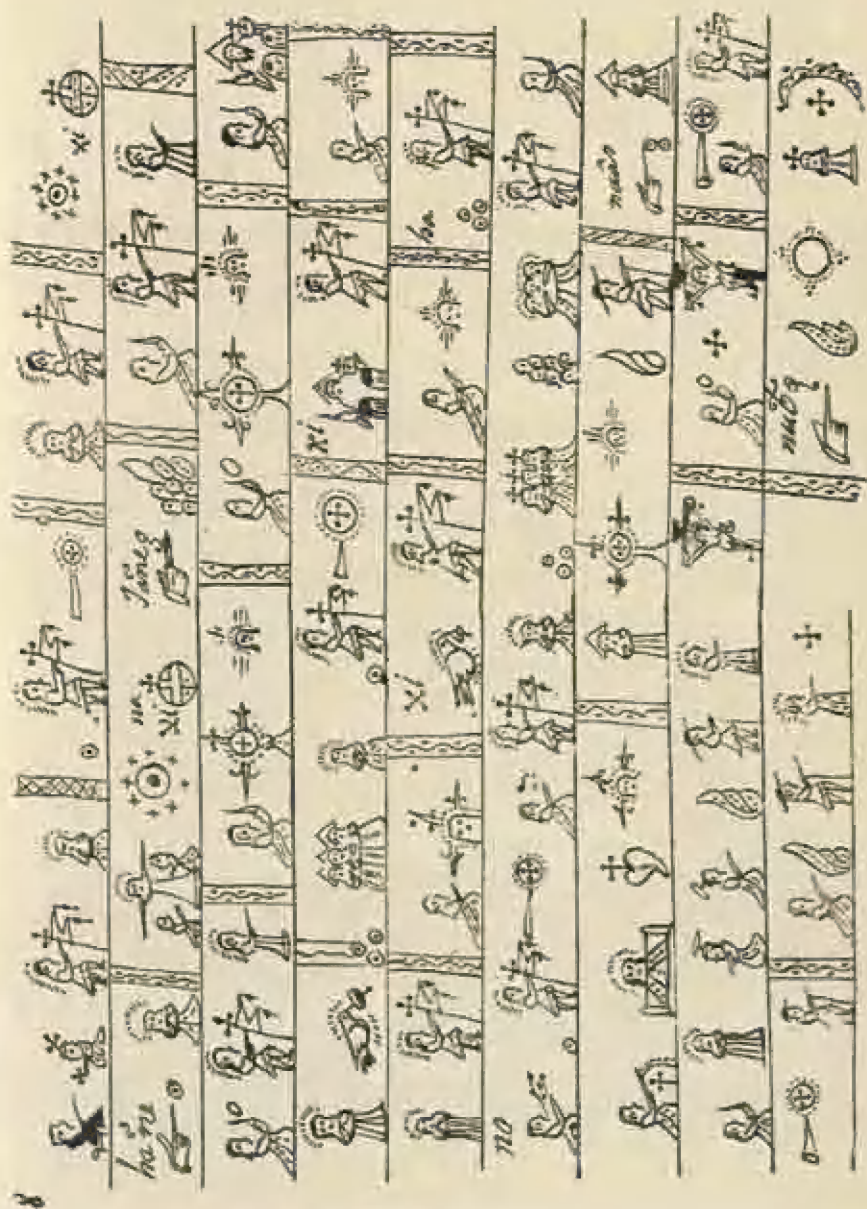
244 COLUMBIOS

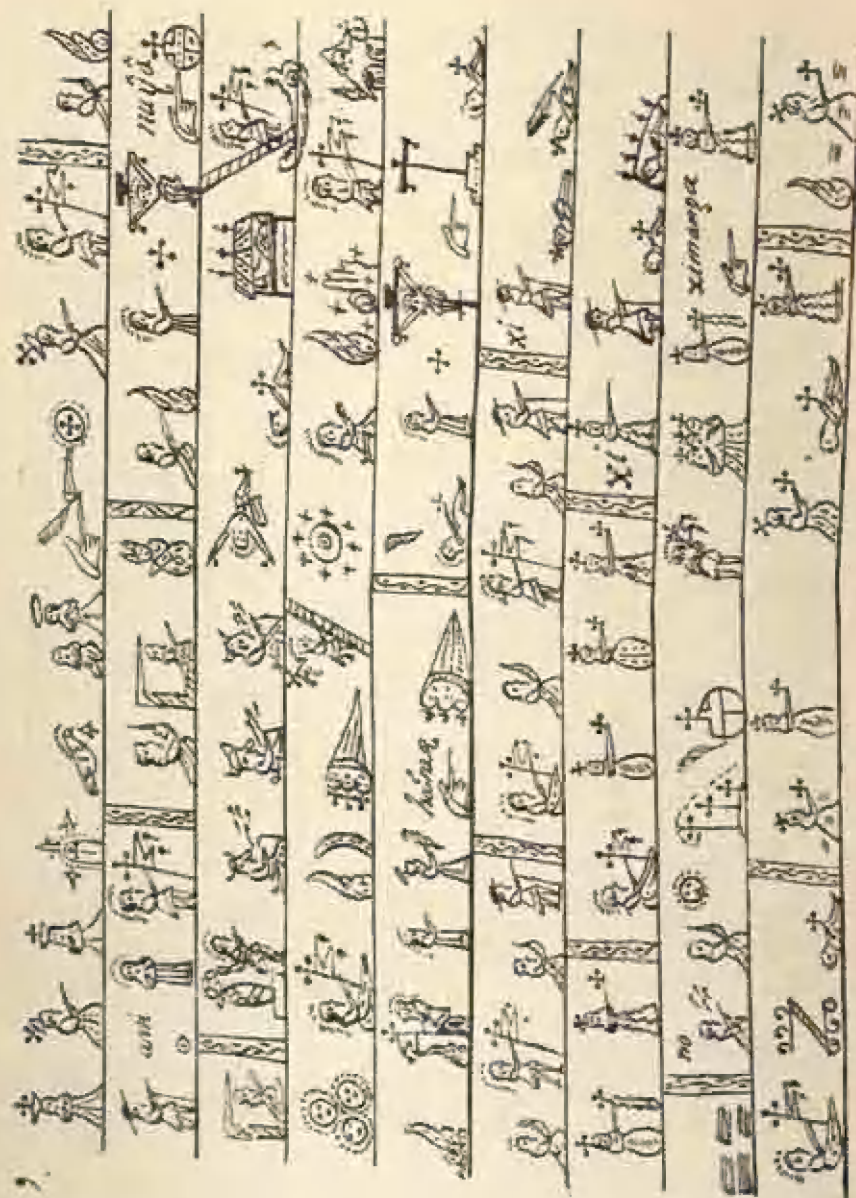


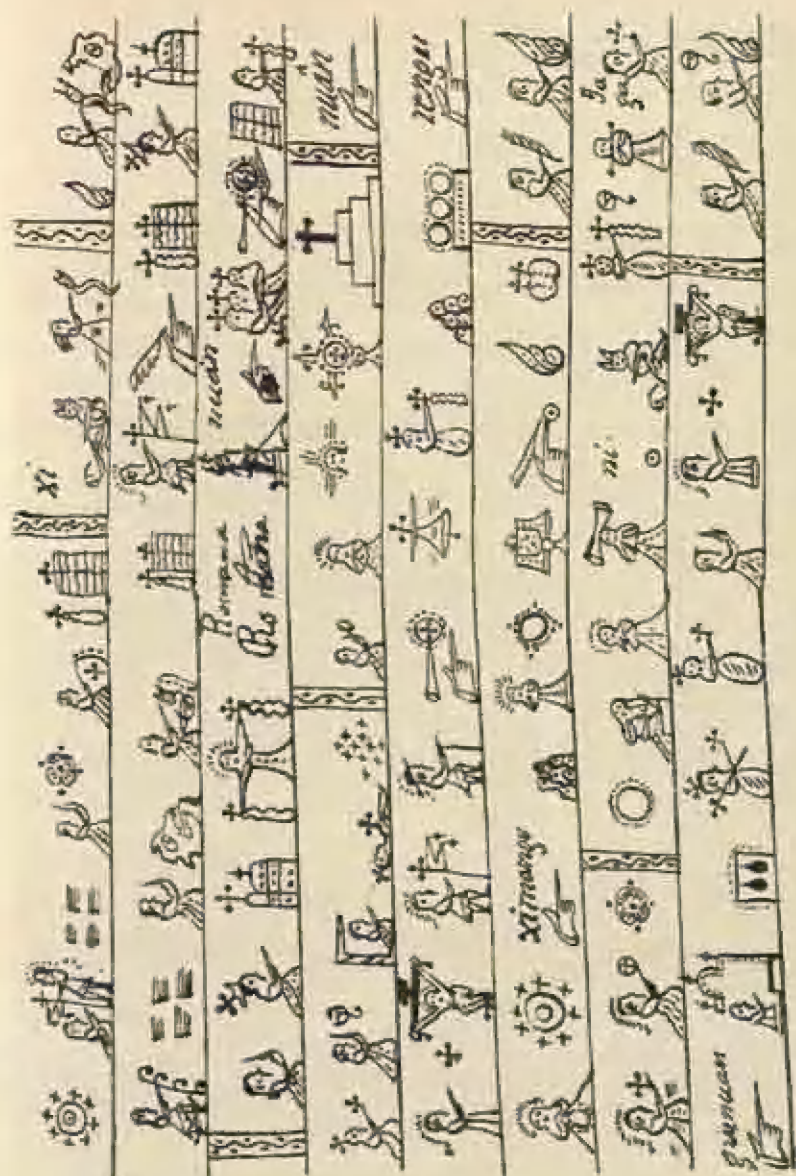
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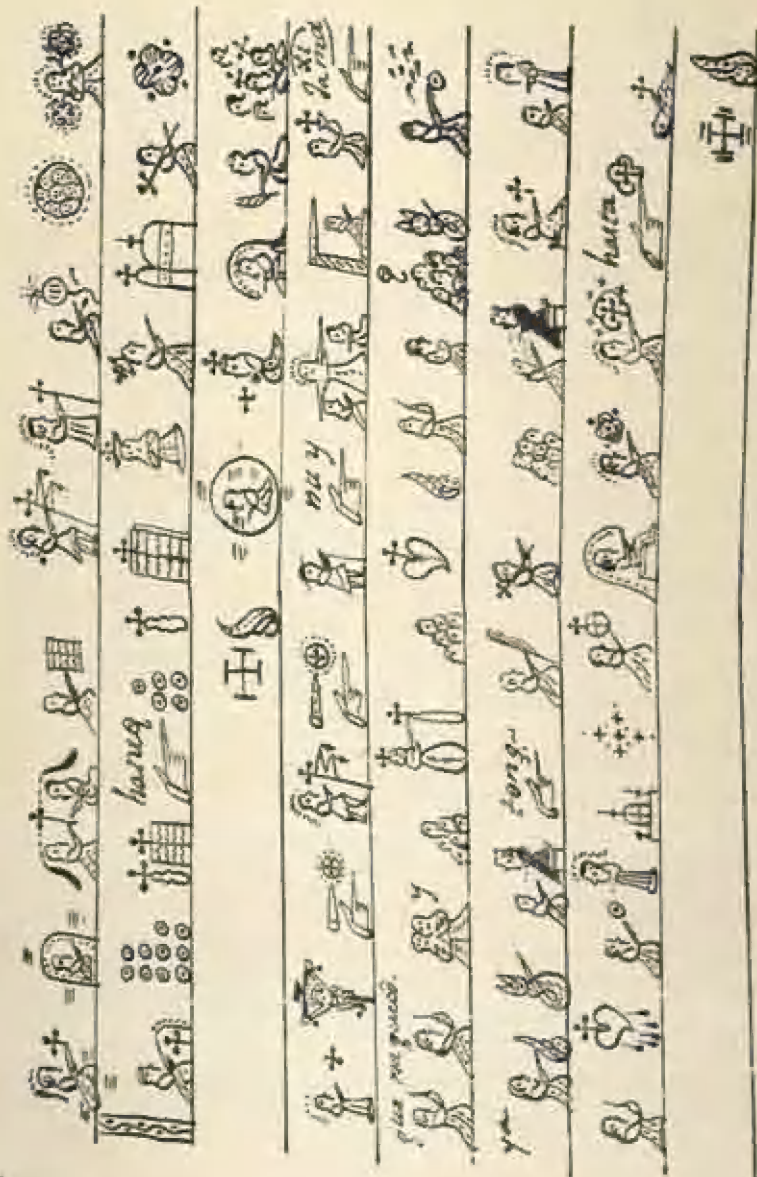








11.



BOOK REVIEWS

Decipherment of the Hieroglyphic Inscriptions of Central America. By JOHN CAMPBELL, LL.D., F.R.C.S. (Transactions of the Canadian Institute. Read March 18, 1899. Published in the Semi-Centennial Memorial Volume, 1849-1899.) Toronto, 1899.

It is indeed strange that such a paper as this should have been read before such an organization as the Canadian Institute by such a learned man as Dr John Campbell of Montreal. For—

Firstly, he has made his investigations merely from the drawings of Catherwood, which, though they are as a rule remarkably accurate, cannot be compared with the fine photographs by Maudslay or with his drawings and those of Miss Hunter.

Secondly, I find no work among those to which Dr Campbell refers in his appendix as treating of Central America which bears date later than 1886, when Rosny issued his reproduction of the Codex Peresianus, and this Dr Campbell speaks of as "in the course of publication." It is to be inferred that his paper was originally written many years ago and that he has never seen or that he has not paid any attention to the writings of Förstemann, Seler, Schellhas, or Goodman, or to the later writings of Thomas or of Rosny, which have been published since that time.

Thirdly, though it may appear incredible, it would seem as if the learned author had had very slight acquaintance with the Maya language, other than that which he had learned from a dictionary, and that he knew but little of the sounds of the various letters.

The first of these shortcomings has resulted in his having been misled in a few instances by errors in Catherwood's drawings. The second leads him to give an erroneous definition to glyphs, which, thanks to the labors of the persons whose names are cited above, are now well known, and further leads him to read the hieroglyphics in a wrong order. The third leads him to some very strange explanations of the meaning of the phonetic values which he finds in the glyphs.

Taking up the question of the order of reading the inscriptions, it has been proved with mathematical certainty that this order, not only in the case of the Temple of the Cross but in practically all the inscriptions which have more than a single column, is from left to right in

columns of two, that is (using Dr Campbell's notation) AB 1-2, AB 3, AB 4, etc. through AB 17; then to CD 1, CD 2, CD 3, etc. through CD 17 and then to EF 1, etc. Instead of this, however, Dr Campbell reads them in the following order: AB 1-2, C 1 to F 1, C 2 to F 2, A 3 to F 3, A 4 to F 4, etc. Even if we understood the meaning of the glyphs, this method of reading would lead to the same sort of confusion as would come from reading the first lines of an English book from page to page until the end and then returning to the second line of the first page and reading the second lines through the book, and so on with the other lines.

It has also been proved with mathematical certainty that in over twenty cases the first two columns A B of the Maya inscriptions are occupied with glyphs which mark a certain date described in two forms of reckoning,—one a count of days and months which fixes the date with certainty within a period of fifty-two years, and the other a long count which fixes the date within a period of many hundreds if not of thousands of years. The first of these counts is made by stating one of the twenty named days with a number, not exceeding 13, attached to it, and joined to these is one of the months with a number, not exceeding 20, giving the day in the month. The second count is by glyphs denoting periods of 144,000 days, 7200 days, 360 days, 20 days, and 1 day, with a number attached to each glyph (or a face representing a number) showing how many of each of these periods are to be taken. Both of these counts agree with each other in the cases referred to; and more than this, each of the days reckoned by the day and year count is distant from a point in the past which is represented by the day 4 *Ahau* 8 *Cumhu* by exactly the number of days given in the second count; and this date 4 *Ahau* 8 *Cumhu* is found more than once in the inscriptions. It occurs in the Temple of the Cross in D 3 C 4. If anything has been proved, the above facts have certainly been proved. And yet what does Dr Campbell make of these glyphs?

B 4 is surely the *Katun* sign and is preceded by A 4, which is a face that probably has the meaning of 19. Dr Campbell says that the two mean *chi-tol*, which he thinks is used for *tsil*, meaning obedient, loyal, ignoring the fact that *ch* never has the sound *ts* and that *c* is not the equivalent of *ts*.

B 5 is certainly the *Tun* sign = 360 days, and the face preceding in A 5 has probably the meaning of 13. Dr Campbell gives to these the meaning of *Kuchilek ahaub*, signifying the disloyal chiefs.

AB 6 surely mean 4 *Uinals* or 20-day periods, but Dr Campbell gives them the meaning of *Kuchilek caan tok*, which he considers the equivalent of *Kaxilek catac*, not noting that the Maya sound *x* is

pronounced *sh*, which is not the equivalent of *ch*. His method can be no better shown than in this remark (page 129): "A 6 is *Kachilek* again" (disloyal); "B 6 should be *caan tok*, from *caan* the sky, which in Quiche is *cah*, the word meant is probably *catar*, and."

AB 7 are surely o *Kin*, but it is called *Ox cib kab* or *Yok cib keb*, meaning "over the evil desire."

Besides the Initial Series, there are scattered all through the inscriptions day and month dates giving a fixed date within fifty-two years, and between or near these dates are the glyphs representing the *Kin*, *Uinal*, *Tun*, *Katun*, and *Cycle* periods with numbers attached, and the sum of these periods is equal to the distance between the dates. One of the simplest of these cases is in the Temple of the Cross S 10 to U 1 (Dr Campbell's notation).

We find here :

ST	10	11 <i>Lamat 6 Xul</i> ,	
	11		unknown,
	12	13.3.9,	
	13		unknown,
	14	2 <i>Caban 10 Xul</i> ,	
S	15	6.3,	
T	15-S 17,		unknown,
T	17-U 1	8 <i>Ahau 13 Ceh</i> .	

Taking the number in ST 12, which gives

13 <i>Tuns</i> or periods of 360 days	= 4680,
3 <i>Uinals</i> or periods of 20 days	= 60,
9 <i>Kins</i> or periods of 1 day	= 9,

we have a sum of 4749 days which = 13 years, 4 days. Counting forward this number of days from 11 *Lamat 6 Xul* in ST 10, we reach the day 2 *Caban 10 Xul* in ST 14. In S 15 we have

6 <i>Uinals</i>	= 120 days,
3 <i>Kins</i>	= 3 "

or a total of 123 days, and counting forward 123 days from 2 *Caban 10 Xul* we reach 8 *Ahau 13 Ceh* of T 17 U 1.

Could there be more conclusive proof of the meaning of these signs than this, and do we not here find sure evidence that the glyphs must be read in double column from left to right, and that on reaching the bottom of one set of columns we must go at once to the top of the next set? And yet what does Dr Campbell make of these glyphs?

S 10 (11 *Lamat 6 Xul*) he calls *Oxlahun Pek* (the name of a chief), mistaking the number 11 for 13.

- T 10 (6 *Xul*) he calls *Uaxac pak* (Oaxaca city), considering the month sign to be a dog's head, and the number 6 to be 8.
- S 12 (3 *Uinals*, 9 *Kins*) he calls *Bolon oxtokob* (rebels of Palenque), and changes this to *Bolon yoktockob*.
- T 12 (13 *Tuns*) he calls *Oxlahun ahanob* (Oxlahun chief).
- S 14 (2 *Caban*) he calls *Canpackchi* and makes this equivalent to *Chunhezah*.
- T 14 (10 *Xul*) he calls *Lahun pek*, or Ten dogs, and then gravely says that he does not find any one of this name, but that Brasseur de Bourbourg speaks of a *Lahun Noh*. *Noh* is the 17th day of the Guatemala month and means a temple. The Maya word for temple is *Kuna*, but *Na* simply means a house, so that *Pak*, a building, might answer for it.
- S 15 (6 *Uinals*, 3 *Kins*) he calls *ox uuctokob*, which he changes to *ox hauac lokob* (the three ceasing to oppose).
- T 17 (8 *Ahau*) he calls *uaxac ich*, which becomes *Oaxaca ich* (into Oaxaca).
- U 1 (13 *Ceh*) he does not translate.

Again Dr Campbell says (page 125):

"But *oxlahun* is found in F 15, with 7 or *uuc*, and another cartouche, on the top of R 2, over a similar cartouche, and after six or *wac*, in U 1, in V 7 before an animal's head, in S 10, in T 12 before *ahan*, in W 14 before a woman's back, in the following X 14 before a symbol not unlike that which follows it in U 1, and in V 17 before a circular figure like that in S 10. Now, if all these denote one thing, place, or person, what is the value of the symbols immediately following the *oxlahun*? If the animal be a dog, as is most likely, the value is *pek*, a dog. To this agrees the woman's back, for *pack* is the back of the shoulders. Also *lak* means 'to tie with cords,' and *pak* denotes 'a stone wall, and to found, build, plant or sow.' The character after *oxlahun* in U 1 is a corded bundle, and the inscribed oval in S 10 and V 17 may, from the analogy of the Chinese, denote cultivated ground. The group thus selected may be read *oxlahun pek*, or 'thirteen dogs,' than which nothing could seem more ridiculous.

"A knowledge of history comes to the relief of the epigrapher, and saves his work from scorn. There was an *ahan* or king, and a very powerful one too, whose name was Thirteen dogs. He was not a Maya king nor a Tzendal, nor even a Quiche; he was king of the Cachiuels of Guatemala."

Now, F 15 and R 2 are the *Uinal* sign, as proved in dozens of cases; U 1 is the month *Ceh*, as can be proved mathematically, and X

14 is probably the same. V 7 is the month *Xul*, and the number is really 11, while the glyph of S 10 is the day *Lamat*, and the number here also is 11. T 12 is the *Tun* sign, and not *Ahau*. W 14 is the day *Chicchan*, and not a woman's back (there is here an error in Catherwood's drawing). V 17 is probably the month *Kayab*, and the number is 12 and not 13. Now, all these signs of the months *Xul*, *Ceh*, and *Kayab*, of the days *Lamat* and *Chicchan*, and of the *Tun* and *Uinal* symbols are made equivalent to the sign *pak* or *pek*, meaning a dog, and why? Merely to enable the author to give the name of *Oxlahun pek*, or Thirteen dogs, which is said to have been the name of a warrior who formerly lived in Guatemala; and in order to find this name, he mis-calls the numbers 11 and 12 as 13.

Once more Dr Campbell says (page 127):

"'Bolompak' or the city of Palenque is E 1, and F 1 commences with *holhun*, 15, which is followed by *hak*, corded, and a common Aztec and Maya hieroglyphic, *tun*, a stone."

Now, E 1 F 1 are really the date 9 Ik 15 *Ceh*. This date is distant from the next date by just the number of days given in D 13-C 15, counting the days of the month as running from 1 to 20.

Dr Campbell again says that F 2 begins with *ox*, thinking that he sees the number 3 as a superfix of the glyph; but the drawing also deceives him here, for the superfix does not denote a number, as can readily be seen from the photograph. But taking the glyph as meaning *ox tem xulob*, he calls this the equivalent of *yok daau xulob*!

Dr Campbell has apparently been led astray by erroneous drawings, by mistaken analogies, and by an insufficient knowledge of the Maya language, and his paper will have to be placed in the same category as Parry's "Sacred Maya Stone of Mexico" and Rochefoucauld's "Palenque." It should be said, however, that on page 112 the author has well-stated the views of many American archeologists when he declares that Morgan was wrong in his attempts to unify the architecture of all the tribes of American Indians and to bring the civilization of the Mayas to the level of that of the Pueblo and other communal Indians.

CHARLES P. BOWDITCH.

A Brief and True Report of the New Found Land of Virginia. Sir Walter Raleigh's Colony of MDLXXXV. By THOMAS HARIOT, Mathematician. With an Introduction. London: Henry Stevens, Son, and Stiles. 1900. 2 vols., pp. 84 and 213.

When a man deliberately avoids the obvious paths toward worldly fame, has posterity a right to insist upon making him famous? Thomas

Hariot, to whom more than to any other we are indebted for definite, comprehensive, trustworthy information about the country and the people found by the earliest English settlers in North America, persistently neglected fame. He knew his own worth; he and his friends were well aware of the importance of the things he did. He was urged to place his claims on record—not for the sake of mundane glory, but in order that the world of scholarship might retain in published form the additions which he had made to the world's stock of knowledge. Hariot delayed and worked on, content with the recognition of friendship, with the delightful satisfaction of helping Raleigh and Henry Percy of Northumberland in their literary and scientific recreations, with the pleasures of correspondence with Kepler, Galileo, and the others who coöperated with them in finding out what was unknown.

Hariot lived and died a typical scholar of an age when scholarship was ripening and bearing fruit. He would have been forgotten, as he has been by a large portion of the community of readers, but for the accident that his only publication was a privately printed tract, issued for a temporary purpose, in which he described the land wherein, two and a half centuries later, was developed the collecting of Americana. Few things written in the sixteenth century are more easily accessible, and yet Hariot is known only as the writer of a bibliographical treasure of unusual rarity. He visited America, wrote and printed this pamphlet to serve his patron's needs, and then turned his attention to other things. For thirty years he devoted himself to study, preparing the way for Descartes by his algebraic innovations and improvements; developing the telescope and, cotemporary with Galileo, working out the problems of the stars; training the seamen who led his patron's fleets to the fatal land of El Dorado; reading and noting the books out of which Raleigh constructed the *History of the World*. At the end he left, contentedly, a chest of papers. His disciples put together for publication a volume of the *Algebra*, but the remainder, the flotsam of a great scholar's study table, came down to the present generation in much the same confusion as when their master left them. Fate did its best to respect his preferences. More than a century ago, a German savant came upon the chest and undertook the task of arranging, elucidating, and publishing Hariot's remains. He made public just enough to prove the old truth that the individual to whom the world credits any great innovation is largely a matter of chance, and then abandoned the labor. A hundred years later, Henry Stevens, in his persistently successful quest for things American or interesting, found the chest again, and in 1878 finished and printed his account of what the papers revealed. And now, after twenty years more, his son has at last issued the volume

which explains why "Hariot's Virginia" is still the best description of North America in the sixteenth century.

The man who could reason out the improvements to Euclid, who could detect the data from which he plotted the courses of the planets, was no ordinary observer. Hariot was still a young man, full of energetic enthusiasm tempered by university training and by responsibility for the success of the affair in hand, when he spent a year in the New World. His account of the country and the people is, naturally, an important and an interesting document. It is suggestive of our habits of reading and research that the slight general acquaintance with the text of Hariot's report appears to be due to the fact that it contains almost nothing that can be utilized for the immediate purposes of narrative historical writing, and that in consequence the historians have been content to mention his name, with a statement that the book is important and very rare. The original edition, privately issued in 1588, is undoubtedly scarce, but the text was reprinted within a year in Hakluyt's first collection of the *Principall Navigations*, and a year later it was again published, with translations into French and Latin, as the first volume of De Bry's great series of voyages. Hakluyt included it in his *Voyages* in 1600, and with the rest of Hakluyt's great work it was reprinted by Evans in 1809, by Mr Tarbox in the Prince Society volume for 1884, and by Goldsmid of Edinburgh in 1889. In 1871 De Bry's edition was reproduced in lithographic facsimile in New York, in 1888 Mr Harry Rylands edited a similar facsimile for the Holbein Society, and in 1893 Bernard Quaritch reprinted it, reduced to small quarto size, in London. Mr Stevens' edition is the first since Hakluyt which reproduces the accurate text of Hariot's own edition.

Many Englishmen had visited America in the years since John Cabot showed them the way across the north Atlantic, but Hariot and his fellows of Raleigh's colony were the first who spent any considerable time in examining the New World. They arrived off the coast of Florida on June 20, 1585, and a week later selected their camping place inside the bars which guard the Carolina coast to the south of Cape Hatteras. During the eight or ten months that followed, Hariot made frequent visits to the natives living in the neighborhood of the English settlement, and he participated in some of the exploring expeditions which gathered data for mapping Pamlico and Albemarle sounds and the seacoast as far north as the entrance to Chesapeake bay. As spring passed into summer the Indians became less friendly, objecting to the steady drain upon their supplies of provisions to maintain the strangers who were doing little to provide for their own needs, present or prospective. Plans were made for driving out the visitors, but these were

successfully frustrated. Meanwhile the promised succor from home failed to arrive, and when, early in June, Sir Francis Drake came up the coast to inquire what he might do to assist the colonists, they decided to return with him to England.

The attempt ended, like many another before and since, but Raleigh had provided Hariot to be his eyes in the new land, and from him he received a report which remains of inestimable value to everyone who would know what North America and its inhabitants were like in 1585.

GEORGE PARKER WINSHIP.

Indian Story and Song from North America. By ALICE C. FLETCHER.
Boston: Small, Maynard, & Co. 1900. 12°, xiv, 126 pp.

It is to be regretted that in American ethnology (and perhaps in all sciences) the explorers seldom come in touch with the public. They write for the few, and present their subject in plain language, but do not take pains to make it attractive with graces of diction. Their knowledge passes through the hands of persons less accurately informed, and sometimes less zealous for exact truth, in order to reach the many.

In the work before us Miss Fletcher has departed from the precedent of her confrères. Having marched for years in the advance guard of ethnology, she has halted for a while to tell her tale to the people. Her little collection of *Indian Story and Song* must prove entertaining and instructive to all readers; it does not belong to what Bandelier calls the "romantic school" of ethnology, yet it must serve to give the average Caucasian a more exalted idea of the savage mind.

We once heard a prosaic gentleman denounce, as affected, those persons who profess to admire Tennyson's "Break, Break, Break." It had no meaning, he said; it told nothing. Perhaps he desired in poetry something like Burton's *Anatomy of Melancholy*, which leaves nothing to be explained or imagined. The charm of the poem to the impressionable is that it suggests without explaining. Taxing not the intellect, it awakens in the mind emotions such as the poet must have felt, if in a less degree. But if the appreciative reader knows something of the poet's early life, of his youthful friendship, and of his great bereavement, he sees a yet deeper meaning in the poem. Read a biography of Tennyson up to his twenty-fourth year, then read these four short stanzas, and the waves will crash on the "cold gray stones" with an added sadness in their monotony.

Such is the light that Miss Fletcher throws on Indian songs. "Meaningless grunts," as some have called them, take on a meaning under her hands; the senseless vocables, the disjointed sentences, the

mere "*Ha—ha—ha*" of the "Song of the Laugh" become poetry. And if it is poetry at all to us scoffing Aryans, how much more poetic is it to those who were born with these songs as their heritage and have grown up with them!

We have no doubt of the correctness of the musical notation and of the harmonizing. The greater part of this work was done by the late Prof. John Comfort Fillmore, that zealous student of primitive song whose untimely loss all Americanists so deeply mourn. We are not sufficiently skilled in music to judge of the propriety of adding these harmonies. We have been told that the musical hearer understands the airs better by having the harmonies printed. Professor Fillmore has told us that the Indians themselves like to hear them, and that when, for experiment, he struck a false note, the Indians expressed their displeasure. Certainly those who object to their presence in this work as too civilized are at liberty to run the blue pencil through them.

We had the good fortune some years ago to hear the "Song of the Spirit" (page 58) sung by two Omaha Indians. It had no verbal meaning; it consisted merely of vowels; yet it was melancholy dirge, well suited to the voices of mourners.

WASHINGTON MATTHEWS.

An Old Indian Village. By JOHN AUGUST UDDEN. (Published by authority of the Board of Directors of Augustana College and Theological Seminary.) Rock Island, Ill.: 1900. Roy. 8°, 80 pp.

This is a well dressed, well prepared, and altogether sensible account of personal researches conducted at intervals during seven years, beginning in 1881, while the author was engaged as an instructor in Bethany Academy, now Bethany College, at Lindsborg, Kansas.

The Indian village to which the memoir is devoted was situated on Paint creek, about a mile and a half south of Smoky Hill river, in McPherson county, Kansas. The remains consist of a group of fifteen low mounds, defining the lodge sites, apparently without particular order of arrangement, but being about 125 feet apart and covering in all an area of some twenty acres. The mounds are circular; none of them exceeds three feet in height, while some rise only slightly above the surrounding level. The material of which they are composed consists principally of loose soil or mud, and in this the relics were found. The soil was not disturbed below the original surface of the plain. "It was not possible," says the author, "to detect any order in the arrangement of the contents of the mounds and there were no buried human remains. Just how the mounds were built seems uncertain. The mud perhaps

accumulated inside the dwellings during a repeated residence of the natives, which occurred at some certain season of the year. All the materials found imbedded were such household goods as may be supposed to have become useless to the inhabitants, or such as may from time to time have been lost. Most of them were broken. The pockets of ashes occasionally found may mark the site of the places where fires were made. Possibly the ground was built up for the purpose of keeping the run-off away during rains. If such was the case, additions must have been made from time to time, for discarded household articles are found in the lower part of the heaps as well as in the upper. Evidently the mounds were not completed all at once. The bones found in the upper part are not as far advanced in decay as those found near the bottom. Indeed it seems possible that the mounds may have been built up from wind-blown dirt and sand settling in dwellings which were left vacant during some season by a nomadic tribe which occupied them during only a part of the year."

Of the animal remains found during excavation, bison bones were most numerous, although the bones also of the antelope, wolf, wildcat, skunk, wild-turkey, and of various fishes, as well as the valves of common river clams were found. Bones of the bison seem also to have been used extensively for implements, such as hoes, gouge-like tools possibly for use as skin-fleshers, and flakers or chippers. Among the specimens of bone is one fashioned from a bison rib and containing along one face a series of shallow parallel notches as if intended for a score rather than for use as a "bow" in rasping a coarsely notched stick or gourd as a musical accompaniment.

The collection of pottery gathered from the mounds consists of several hundred sherds of coarse ware and not very skilful workmanship, only a few being sufficiently large to enable restoration of the original forms. The principal decoration consists of simple incisions; a few of the specimens are colored red outside, and many sherds bear the almost obliterated impressions of textile fabrics, evidently basketry. Ring and knob handles, crudely attached, are common features. Of the stone implements a number of forms are described and illustrated—scrapers, knives, projectile points, drills, arrowshaft-smoothers, hammers, and metates and other grinding tools being most prominent. The small stone points illustrated in figure 17 of the article seem rather to have served as drills than as awls, bone serving the purpose of the latter much more acceptably. Specimens identical to those shown in this figure are still used in preference to metal by the Queres Indians of New Mexico for drilling turquoise and shell beads. Metates and manos of Dakota sandstone are abundant and illustrate various stages of

manufacture and use. That the inhabitants of the village possessed knowledge of the value of Minnesota catlinite is shown by several fragments of pipes, while whole specimens, together with a worked block of the material, have been found in the vicinity of the mounds.

Probably the most interesting object obtained from the Paint Creek village is a piece of chain-armor about two inches square. Before learning of the finding of this specimen the present reviewer published a report of his studies of Coronado's route from Culiacan to Quivira in 1540-41,¹ reaching the conclusion that this identical neighborhood formed part of the famous province of Quivira of that period. Professor Udden's description and photographic illustration (the specimen unfortunately is lost) are therefore of interest as in a measure confirming conclusions reached independently through historical and ethnological investigation. This testimony is not conclusive, however, that the fragment of armor is a relic of the Coronado march, for at least two other expeditions penetrated the Quivira region within half a century of Coronado's journey. The first of these was that of Francisco Leiva Bonilla and Juan de Humaña, who went without authority to Quivira from Nueva Viscaya via New Mexico about 1594, but of their party only two or three, including a mulatto girl and an Indian, escaped massacre. The other journey was undertaken from New Mexico by Juan de Oñate, who went with eighty-odd followers in 1601. Unfortunately the information regarding both of these explorations is so meager that it is impossible to trace the route of the Spaniards, consequently the exact origin of the occurrence of the chain-mail in the Paint Creek village may never be known.

Such is the scope of the work of an instructor in natural history who frankly asserts that he is not an archeologist and that (more 's the pity) this will be his last as well as his first paper bearing on topics of this kind. On the whole these published results of Professor Udden's researches will serve as a model for students of local archeology throughout the Mississippi valley. In the information which it affords and in its mechanical make-up, the brochure is a credit to the author and to the institution under whose auspices it appears.

F. W. HODGE.

In & Around the Grand Canyon. The Grand Canyon of the Colorado River in Arizona. By GEORGE WHARTON JAMES. Boston: Little, Brown, & Co. 1900. 8°, xxiv, 341 pages.

This is the age of beautiful books—and the publishers of Mr James'

¹ "Coronado's March to Quivira," in *Memoirs of Explorations in the Basin of the Mississippi*, vol. II, "Harahey," by J. V. Brower, St Paul, 1899.

volume on that marvelous scar known as the Grand cañon of Arizona may rightly feel proud of this recent product of their handiwork.

While not strictly anthropological in its scope, *In & Around the Grand Canyon* treats of a region of country which, inhospitable though it is in many respects, forms the habitat of some of those whom, through a sort of poetic license, we have grown accustomed to call Red Men. Although a chapter is devoted to the Havasupai tribe, which makes its home in the depths of Cataract cañon, those interested in the living things of the region may feel disappointed at the paucity of its information. The sweat-bath, which does not vary in any essential particular from that of many other tribes, is described at some length. The words of one of the songs employed by a medicine-man during the process are of more poetic than of ethnologic interest, since the author confesses that he was able to catch only enough of it to explain that it was the recital of an invocation from the gods to the Indians that they must not neglect this means of purification. The method of construction of the sudatory, which is purported to have been prescribed to the Havasupai, who must

Make it of willows, green willows,
That grow on the banks of the Havasu—

is scarcely in harmony with the fact that these Indians are a comparatively modern offshoot of the Walapai, and that they have made their home in Havasu or Cataract cañon probably for no longer a period than since the beginning of the seventeenth century. Mr James accepted the invitation of the Indians to indulge in a sweat-bath (which they believe to be efficacious in purifying both body and ghost), during which the song referred to was recited; this was followed by another, when the steaming ordeal began, but it seems to have had such an exhilarating effect on the author that, after catching his breath, he found himself able "to join another song (of the same burden) with earnestness and fervor."

Another chapter makes bare allusion to the ancient cave (more properly cavate) dwellings in the volcanic cinder cones northeast of Flagstaff (described at length by Dr Fewkes in the last number of this journal), and refers to the surrounding lava walls as a means of defense against the former inroads of the Apaches, Navahos, Utes, and Comanches. It might be said that the Comanches never appeared even in New Mexico until the dawn of the eighteenth century, and that at no period are they known to have extended their depredations in New Mexico west of the Rio Grande. Mention also is made in the same chapter of the cliff ruins of Walnut cañon, east of Flagstaff, and in

another the occurrence of ruins, a prehistoric irrigation canal, and some small circular food caches on Shinumo creek are noted.

We must take exception to the interpretation of the name Cohonino, or Coconino, applied to the Havasupai, as being of Zuni origin. These Indians are of Yuman stock, and the element *coco* is found in other Yuman tribal names, as Cocopa and Cocomaricopa. Moreover, the name Coconino (in the form Cosnino) was first employed in 1776 by Fray Francisco Garcés, who approached the cañon country from the westward, with Yuman guides, and not from the direction of the Zuni country, which he never saw.

Mr James uses throughout the Anglicized form *canyon* in preference to the Spanish *cañon*, for which he has abundant authority, inasmuch as *ñ* (which in Spanish is as distinct from *n* as *z* is from *δ*) is not found in English; but when the author disregards the pronunciation of Zuni by spelling it *Zuni* throughout, he does violence to long-established and unchangeable rules. The English forms *Mohave* and *Navaho* are entirely permissible, since the pronunciation is the same as if the Spanish *Mojave* and *Navajo* were used. *Paiuti*, however, should be *Paiute* (i. e., "Water Ute"). No one would think of calling the Utes "Utis," though this would be an equivalent liberty.

As one would expect, the author relates, in a pleasing way, many personal incidents of his numerous prolonged visits to the Grand cañon during the last ten years, and many entertaining local anecdotes that have reached his ears are now recorded for the first time. The various trails are described, an honest effort is made to portray in word-pictures the unportrayable scenery of the stupendous gorge, and a sketch of its history from the discovery by Cárdenas in 1540 to its exploration in modern times, with particular reference to the remarkable journey down the rapids by Major Powell in 1869, is given. The volume concludes with a bibliography of the Grand cañon region, which might have been more complete and more conveniently arranged.

The book is beautifully printed on fine plate paper, while the numerous illustrations, mainly from photographs by Maude, Peabody, Lippincott, Messenger, and the author, are beyond criticism.

F. W. HODGE.

The Childhood of Fi-shib, the Ojibwa, and Sixty-four Pen Sketches.
By ALBERT ERNEST JENKS, Ph.D. Madison, Wis. : The American Thresherman. 1900. 12°, 132 pages.

The author of this tasteful little volume is already favorably known to the readers of this journal, but nothing that has yet been published under his name impresses one with his intimate acquaintance with the mode of

thought of the tribes of the Great Lakes more fully than does this story of Ji-shib'. Although designed primarily as a juvenile work, the book is commended to every grown-up who would learn of the life of an Indian boy from his birth to the arrival of the day on which the outgrowth of his childhood is ceremonially recognized. Many side-lights are cast on the former customs of the Ojibwa, for Ji-shib' was a member of this great tribe in the days before the white man came. A delightful bit of lore in which the Beaver figures conspicuously and which afterward becomes the hero's totem, introduces the story and forms an important strand in its thread. The personification of animals by the Indian, on which depends so much of his religious belief, the "making" of a medicine-man, the use of the medicine in whose potency the aborigine places such reliance, hunting, warring, canoe-making, arrow-chipping, and much else that made up the workaday life of the typical Indian are delightfully detailed as a part of a connected story. It is a charming little book in every way, interest in the text being enhanced by a series of sixty-four quaint marginal pen-sketches by the author.

F. W. HODGE.

PERIODICAL LITERATURE

GENERAL

Caselli (Dr A.) Sulla permanenza del canale cranio-faringeo nell'uomo. (Rivista sperim. di Fren., Reggio-Emilia, 1900, XXVI, fasc. II-III, 391-396.) Out of more than 1300 crania of lunatics in the Museum of the Asylum at Reggio, Dr Caselli found 12 (males 3, females 9) skulls presenting retention of the cranio-pharyngeal canal. Faleter evidences not taken into account lead the author to consider this ratio (about 1%) too low. Rossi found this duct in 9 out of 3700 skulls, a much lower percentage. —A. F. C.

Curli (Martha A.) Ancient gems. (Am. Antiquarian, Chicago, 1900, XXII, 284-291.) Mentions early use of gems. A few sentiments and superstitions regarding them are given. —H. I. S.

Del Greco (F.) Il fondamento biologico del "Carattere" nelle indagini psichiatriche. (Rivista di Scienze biol., Torino, 1900, II, 602-619.) According to the author psychopathic investigations justify us in distinguishing in the human individuality, four orders of facts, viz., temperament, constitution, mind, character. Temperament and constitution are the bases of the edifice, and social life is the matrix of mind and character. Dr del Greco discusses the biological fact in very suggestive fashion. —A. F. C.

d'Enjoy (F.) Le rôle de la main dans les gestes de responsabilité. (Revue Scientifique, Paris, 1900, 4^e série, XIV, 81-83.) A brief study of "manual and digital signatures." The thesis of the essay is that "the hand commands, swears, signs, is the generatrix of responsibility." It affirms: resolutions, formalizes promises, makes irrevocable engagements. Very interesting is the account of the Annamite custom of signatures by means of the *dien-chi* or measurement of the forefinger. —A. F. C.

Farrington (Oliver C.) The worship and folk-lore of meteorites. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 199-208.) Enumeration of authenticated instances of worship of meteorites, and legends referring to meteorites. —H. I. S.

Frassetto (F.) Interpretazione meccanica di nuove fontanelle (fontanelle stefaniche) nel cranio dell'uomo e di alcuni altri mammiferi. (Rivista di Scienze biol., Torino, 1900, II, 506-512.) The persistence of stephanic fontanelle is due to a mechanical rather than to a pathological cause,—the incomplete growth of the two centers of ossification of the frontal and parietal. The article is accompanied by a good plate with six figures. —A. F. C.

Hazen (H. A.) The origin and value of weather-lore. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 191-198.) Some popular signs predicting weather are correct, while many are not based on fact. The conditions of animals and development of vegetation are no indication of the weather during the coming season. Approaching storms may affect the behavior of animals. —H. I. S.

Larger (R.) Le "haut mal" de Marie Leczinska. (Revue Scientifique, Paris, 1900, 4^e série, XIV, No. 12.) In this study of degeneration the author comes to the conclusion that the disease from which, in adolescence, the wife of Louis XV had suffered, the "haut mal," as it is called, was tuberculosis. The degenerative-hereditary influence of Marie Leczinska upon the Bourbons, like that of Marie de Medici on the house of Valois, may be said to have given the *coup de gredre* to a degenerate race of monarchs. —A. F. C.

Lasch (Richard.) Die Verbleibsorte der abgeschiedenen Seelen der Selbstmörder. (Globus, Braunschweig, 1900, LXXVII, 110-115.) Four points of view are found among various peoples: (1)

Lasch (Richard)—*Continued.*

the soul of the suicide shares the fate of other souls; (2) it is rewarded by a happy lot in its life after death; (3) it becomes an evil spirit which does not share the lot of other souls and which troubles the living; (4) it is punished in the future world.—F. B.

Leggiardi-Laura (C.) and Varaglia (S.) Contributo allo studio delle varietà delle circonvoluzioni cerebrali nei delinquenti. (*Rivista di Scienze biol.*, Torino, 1900, II, 332-342.) Gives results of observations made upon 142 male and 304 female cerebral hemispheres of criminals, belonging to the Giacomini and Lombroso collections. The present paper deals with the fissure of Rolando.—A. F. C.

Letourneau. La monnaie chez les races de couleur. (*Bull. Soc. d'Anthro. de Paris*, 1899, 679-692.) The use of some sort or other of money among primitive races is very extended. The objects utilized as money vary greatly. In Africa, the objects most generally employed as money are various articles of industry, such as stuffs, particularly calico, glass-beads and metal-thread; but the cowries (shell-money) are also used in certain regions. Among the Bongos on the upper Nile we meet with iron money, in the form of discs 25 to 30 cm. wide and of about the same height. In the interior of Africa salt is used as a means of exchange, and among the Bari, Latookas, Dinkas, etc., cows are used similarly. The employment of cowries as money is found among the Papuas, on Solomon Islands, in New Caledonia; and shell-money was common in most parts of America. The Aztecs used pieces of copper and tin, quills filled with gold-dust, and particularly seeds of cocoa; while for smaller transactions they availed themselves of pieces of cotton as the means of exchange. Cowries are also used in Siam, and there is a tradition of a time when they had been in use in China. Besides the cowries we find in Siam silver money, consisting of small balls of the metal; and in Burmah pieces of lead are employed for similar purposes. The only money issued in China is the "cash," a small, perforated copper-piece, invented, it is said, 2600 years before our era; 1700 to 1800 of these coins constitute the value of a taël or the Chinese ounce (37.796 milligrams) of

silver. Besides the metal coins, China has also paper money; this existed in China, in a more primitive state, during the first century A.C. The economic history of China enables us to follow the complete evolution of money and mode of exchange.—A. H.

La vie de conscience chez l'homme. (*Rev. de l'École d'Anthro. de Paris*, 1900, X, 1-16.) This clear and highly interesting paper is really an abstract of the author's prospective course (in the 1899-1900 curriculum of the École) in sociology. The author divides his course and also his paper into seven parts. In the first of these he deals with "the essence of the spirit or soul"; in the second with "nervous impressions"; in the third with "sensations and memories"; in the fourth with "desire and will"; in the fifth with "sentiments and affects"; in the sixth with "the thought"; and in the seventh part with the "role of intuition in social evolution."

Part I: The principal property of mind is consciousness, by which the author understands solely "the quality, belonging to certain nerve-cells, to feel the molecular modifications, which take place in their proximity and are the causes of all the so-called psychical phenomena." The first evident manifestations of consciousness are observable in the higher mollusks and in arthropods. "The mental life is simply the conscious side of organic life"; its causes are essentially biological phenomena. "The consciousness of personality of the psychical ego . . . is but the sentiment of organic unity, or rather of a portion of this unity, for even in man there exists a whole federation of nervous centers whose function remains beneath the psychical horizon."

II: "The nervous and particularly the cerebral centers, with the millions of cells that constitute the gray matter, may be considered as living archives in which there are engraved and conserved infinitely numerous experiences of the species, acquired during its organic and social life." All the qualities of our intellect are due largely to the inherited results of these experiences of our ancestors, of the nervous impressions received and stored up in the past.

III: "A sensation is the consciousness of a direct or indirect contact with some

Letourneau—Continued.

object." "The traces left by sensations in our nervous cells are the memories, that is, more or less clearly revivable sensations." "Recollections do not differ essentially from the sensations of which they are the images, and the faculty of memory is a twin-sister of sensibility." "Furthermore, memory is closely related to instinct—in fact it is a nascent instinct."

IV: The psychological desires are also related to sensation, or sense-impression. They are inclinations or appetites provoked by previously experienced pleasures. A sense impression is the seed of desire. The more a brain is furnished with memories, the more numerous and varied are its desires. Desires are the true factors of civilization, for, good or bad, it is they that lead humanity. Will can not be distinguished from desire. Our desires are multiple; they strengthen or oppose each other; our consciousness, which feels a number of the desires simultaneously, chooses necessarily the strongest of these, and this deliberate desire, the victorious desire, is called the will.

V: The mental phenomena comprised in the category of "sentiments and affects" are very complex, and in this paper the author does not enter into details concerning the same.

VI: Thought is closely related to simple consciousness of sensations. Intellect can be explained as the faculty of mental confrontation of sensations, and ideas is the resulting and perceived relation of this confrontation. Sensibility gives rise to memory, this to imagination, and from memory and imagination originate intelligence and reason.

VII: Intuition "should be understood as an instantaneous perception of a whole group of facts and contingencies." "Intuitions, or rather their possibility, result most frequently through heredity." The acquired intuitions were the most important factors in the progressive evolution of humanity. They differ largely in individuals. They constitute the body of our esthetic and moral sense. A formation of the ethic intuitions is the aim of legislation, religions, and education.—A. H.

Livini (Dr F.) Contribuzioni alla anatomia del negro. (Archivio per l'Antropologia, Firenze, 1899, XXIX,

203-228.) Gives the results of dissection of two mulattoes recently deceased in Italy. One (female, aged 44) was born in Florence of a white mother and negro father, the latter from the coast of Mozambique; the other (male, aged 72) born in Cuba of white (Spanish) mother and negro father, had lived in Italy since his seventh year. Muscular and vascular system, intestines, teeth, are discussed. Another paper is promised.—A. F. C.

Lombroso (Gina.) Il polimorfismo degli insetti sociali e degli uomini. (Rivista di Scienze biol., Torino, 1900, II, 326-331.) Seeks to show the existence in human society of a sterile class or special caste, as seen among some of the insects (termites, ants, etc.). In human kind the comparison is with priests, soldiers, monks, nuns, prophets, fakirs, pythonesses, etc. The "third sex" belongs here also. The birth and marriage statistics of Europe reveal according to the author "a gigantic polymorphism in process of formation, the result of which can only be a class of "neuters" and a class of "fecunda."—A. F. C.

Mori (Dr A.) Alcuni dati statistici sulla forma e sull'indice nasale dei delinquenti italiani. (Archivio per l'Antropologia, Firenze, 1899, XXIX, 243-280.) This study, which is supplied with seven tables, besides statistical data in the text, is based on 505 male prisoners in the jails at Piombino and Volterra. In criminals, as compared with normal individuals, the author notes (1) greater oscillations between the extreme values of length, breadth, and index; (2) higher average value of index; (3) less evolutionary (more negroid or infantile) type of index and nasal form; (4) lack of conformity of cephalic index and nose-form to the law of geographical distribution holding for normal individuals.—A. F. C.

Moseley (Crowder B.) Numeral characters: theory of origin and development. (Am. Antiquarian, Chicago, 1900, XXII, 279-284.) The author states "the aim of this paper is to unfold a theory for the development of the digits out of a system still in use by the Chinese . . . and to suggest in what way our system . . . has become so widespread." The evidence seems insufficient to prove the theory.—H. I. S.

Robin (Paul). Une résidence fédérative. (Bull. Soc. d'Anthr. de Paris, 1899, 692-698.) The paper is more an extended notice, than a report, on the communal colony, the Wainoni federation, established by Prof. A. W. Bickerton near Christchurch, New Zealand. The objects of the colonists are to "simplify life" by economizing in common labor and drudgery, and to advance the social life of the community on the lines of the communal philosophy of Professor Bickerton.—A. H.

Sergi (G.) Le forme del cranio umano nello sviluppo fetale in relazione alle forme adulte. (Rivista di Scienze biol., Torino, 1900, II, 401-413.) The bases of this study are 41 fetal crania from the province of Catania, Sicily. The predominant fetal form of skull is "pentagonal," the ellipsoidal and ovoid being rare; pentagonal adult forms are persistent focal pentagonal forms; the source of the pentagonal fetal form arises from the process of ossification of the cranium, in the soft and flat parts,—hence the characteristic spiculae.—A. F. C.

Stratz (C. H.) Der Werth der Lenden-gegend für anthropologische und obstetrische Messungen. (Archiv f. Anthropologie, Braunsch., 1900, XXVII, 117-128.) Discussion of sexual differences in the external topography of the lumbar and sacral regions and their significance. No very striking conclusions are reached.—L. F.

Welcker (H.) Die Zugehörigkeit eines Unterkiefers zu einem bestimmten Schädel, nebst Untersuchungen über sehr auffällige, durch Auftrocknung und Wiederanfeuchtung bedingte Gröszen- und Formveränderungen des Knochens. (Archiv f. Anthropologie, Braunsch., 1900, XXVII, 37-106.) Exhaustive examination of the question of the possibility of determining whether or not a given inferior maxilla belongs to a given skull when the articulation is missing, and after an exhibition of extraordinary industry, the author decides in the affirmative. The test material used was, principally, an Australian skull.—L. F.

AMERICA

Boas (Franz.) The religious beliefs of the Central Eskimo. (Pop. Science Monthly, N. Y., 1900, LVII, 624-631.)

A full version of the myth of the origin of sea-mammals is given and the long series of taloons based on the tradition is discussed. It is forbidden to do work because the transgression becomes fastened to the soul of the sea-mammal which takes it to the abode of the deity whose hands are made sore by the transgression, which is considered a tangible object. Transgressions can be atoned for by confession.—F. W. H.

Curtis (William E.) The road to Bolivia. (Nat. Geog. Mag., Washington, 1900, XI, 219-224, 264-280.) A popular description of a trip from New York to Bolivia, mentioning Panama, ruins of Pachacamac, Iquique, Cuzco; the native people of the region are also briefly described. Thirteen illustrations of natives, ruins, etc.—H. I. S.

Endlich (Rud.) Zur Etymologie des Wortes "Paraguay." (Globus, Braunsch., 1900, LXXVII, 191-193.) The name Paraguay is probably derived from that of an ancient chief, Paragui, which in Guarani means a circle of many colors.—F. B.

Guevara (T.) Historia de la civilización de Araucanía. (Anales de la Universidad, Santiago de Chile, 1900, 115-141.) In these pages Guevara continues his discussion of the conflict between the Spaniards and the Chilean Indians after the death of Valdivia and the disaster to the whites at Tucapel. The deeds of Villagra take us down to 1557, the epoch of Ercilla, the author of the epic *La Araucana*.—A. F. C.

Kroeber (Alfred L.) Symbolism of the Arapaho Indians. (Bull. Am. Mus. Nat. Hist., N. Y., 1900, XII, 69-86.) A discussion of decorative designs of the Arapaho Indians. It is shown that the decorative elements may be considered largely as adapted pictographs. The tendency is toward a development of geometrical designs. A number of abstract ideas are represented by symbols.—F. B.

— Cheyenne tales. (Jour. Am. Folk-Lore, Boston, 1900, XIII, 161-190.) Thirty-three Cheyenne tales collected in Oklahoma by the author in 1899, and published with but little alteration from the original which was dictated in English or written in English by the Indian. Mr Kroeber well says "the loss of the original character remains, the greater the need for its preservation."—H. I. S.

Mills (W. C.) The Baum prehistoric village site. (Ohio State University Naturalist, Columbus, 1900, I, 4-8.) Discusses recent field work of the Ohio Archeological and Historical Society, which consisted of systematic excavation of a village site in Ross county. The objects found are described. The former occupants had a domesticated dog which has been identified as similar to our bull terrier.—F. W. H.

Saville (Marshall H.) A shell gorget from the Huasteca, Mexico. (Bull. Am. Mus. Nat. Hist., N. Y., 1900, XIII, 99-103.) The deity represented on this gorget is identified with Ghanan, the God of Growth. A swastika is represented on the ear ornament. A number of other instances of the use of the swastika in ancient Mexico are given.—F. B.

— An onyx jar from Mexico, in process of manufacture. (Bull. Am. Mus. Nat. Hist., 1900, XIII, 105-107.) This jar shows that a reed drill was used in fashioning it. The cores left standing by the drill were broken out and the process of drilling continued until the bowl of the jar was completed.—F. B.

— Cruciform structures near Mitla. (Bull. Am. Mus. Nat. Hist., 1900, XIII, 201-215.) Description of four cruciform chambers with mosaic decoration.—F. B.

Seler (E.) Einiges mehr über die Monumente von Copan und Quirigua. (Verh. d. Berl. Ges. f. Anth., Eth. u. Urgesch., 1900, XXXII, 188-224.) Part of a careful description and discussion of hieroglyphs from numerous monuments. The article is profusely illustrated.—L. F.

— Codex Cospi. Die mexikanische Bilderhandschrift von Bologna. (Globus, Braunsch., 1900, LXXVII, 323-325.) Notice of the facsimile reproduction of a Mexican codex published by the Duke of Loubat.—F. B.

Starr (Frederick.) Mexican paper. (Am. Antiquarian, Chicago, 1900, XXII, 301-304.) Paper was made from maguay leaves and from bark. The Otomi still make the latter and the process is described. The product is used in ceremonies. The author is inclined to see significance in the similarity of the Polynesian, Thingit, and Mexican bark-beaters as a reinforcing but not alone a strong evidence of borrowing.—H. I. S.

Wiltse (Henry M.) In the southern field of folk-lore. (Journal Am. Folk-Lore, Boston, 1900, XIII, 209-212.) Extension of folk-lore studies in the south will be difficult, as it is not understood as an important source of history. Remarks on bewitched guns, mysterious deer, and hoodoo charms are given.—H. I. S.

Wintenberg (W. J.) A remarkable Indian pipe. (Reliquary and Illustrated Archaeologist, London, 1900, VI, 119-120.) Describes and illustrates a stone pipe found on a village site near Bright, Oxford county, Ontario. Compares the designs on it to designs from remote parts of the world.—H. I. S.

INDONESIA, POLYNESIA, AND AUSTRALIA

Bauer (F.) Ueber Schädel von den Philippinen. (Archiv f. Anthropologie, Braunsch., 1900, XXVII, 108-116.) Brief description with measurements of four Filipino skulls from collections in Madrid. Author concludes that they belong to a brachycephalic race entirely unrelated to the Negritos.—L. F.

Finsch (O.) Das Kilit-Armband der Felaen. (Globus, Braunsch., 1900, LXXVII, 153-159.) Description of bracelets made of the atlas of the dugong and discussion of the opinions of Kubary and Serrurier in regard to customs connected with the use of this bracelet and in regard to its distribution.—F. B.

Jayne (H. H.) Wajang Kéletik oder Kénutjil. (Internationales Archiv f. Ethnographie, Leiden, 1900, XIII, 97-119.) Continuation and conclusion of previous article on the same subject.

Plauchut (Edmond.) L'archipel des Soulou et les États-Unis. (Revue Scientifique, Paris, 1900, 4^e série, XIV, 266-269.) An interesting account of the author's experiences in the Sulu archipelago while present at the installation of a new sultan during the latter days of the Spanish régime. He notes that the American lordship over these islands is as yet as unreal as that of the Spaniards. The fierce Mahometanism of these "Moros" has still to begin to be tamed.—A. F. C.

Smith (S. Percy.) *Dei e idoli dei Maori.* (Archivio per l'Antropologia, Firenze, 1899, XXIX, 239-242.) Describes (with figures) three idols of the Maoris of Taranaki dating back to 1849. These *aria*, or "visible dwellings" of the deities, represent *Maru*, *Tangaroa* (the Maori Neptune), and *Rongu* (deity of agriculture). According to Mr Smith such idols are very rare. The same article appears in German in the Intern. Arch. f. Ethnogr., XII, 223-225.—A. F. C.

Thilenius (G.) *Die Besiedelung der Nordwest-polynesischen Inseln.* (Verh. d. Berl. Ges. f. Anth., Eth. u. Urgesch., 1900, XXXII, 95-98.) Author concludes on various grounds that the peopling of the northern islands is not the result of any general migrations but of chance arrival of small parties; also, that the present population is a mixture of Polynesian, Micronesian, and Melanesian elements.—L. F.

Vormann (P.) and Schmidt (P. W.) *Ein Beitrag zur Kenntnis der Valman-Sprache.* (Zeitschrift f. Ethnologie, Berlin, 1900, XXXII, 87-104.) Valman is spoken on a stretch of coast line of German New Guinea. The study is made by Schmidt from notes by Vormann. The material is not extensive, but permits the determination of some grammatical points which are brought out in the article. The conclusion reached is that Valman is not Melanesian but Papuan in type.—L. F.

AFRICA

Cleve (G. L.) *Zwei Zeugen verunkelter Bantukultur.* (Globus, Braunsch., 1900, LXXVII, 193-195.) The Hantu word *ufalme* designates the ruler over a number of lesser kingdoms. There is at present no ruler who bears this title, but the Arabian author Masudi, who wrote a thousand years ago, describes a kingdom extending from the upper Nile to the Limpopo which was ruled by a *falme*. The word *umlungu* originally designated a supreme deity, although now-a-days it is used for all deities.—F. B.

Fritsch (Gustav.) *Die Bevölkerung Südafrikas in ihrem Verhältnisse zum Transvaalkriege.* (Globus, Braunsch., 1900, LXXVII, 159-163, 174-179.) De-

scription of the conditions under which the strong feeling for national independence and of national unity arose among the Boers of South Africa, and a discussion of the relations of the English to the native element.—F. B.

Loir (A.) *Usages et coutumes au moment de la mort chez les Tunisiens.* (Revue Scientifique, Paris, 1900, 4^e série, XIV, 232-238.) Treats of superstitions relating to the treatment of the dying among the Sicilian, Jewish, Greek, and Arab population of the city of Tunis,—of "Little Sicily" especially. The attention of the author was called to these practices by an epidemic of rabies, which suddenly increased the number of patients at the Pasteur Institute in Tunis. Some of the customs he styles "savage."—A. F. C.

v. Luschan (F.) *Pfeile mit einseitigen Kerben.* (Globus, Braunsch., 1900, LXXVII, 329-330.) Description of arrows from Togo, the notch of which is formed by a single projection or by a single splint tied on to the rear end of the shaft.—F. B.

Afrikanische Lehnstühle. (Globus, Braunsch., 1900, LXXVII, 259-261.) While chairs from East Africa and West Africa are undoubtedly imitations of Asiatic, viz., European models, a number of chairs from the Kongo basin which are cut out of single pieces and which have a high back must be considered as native inventions.—F. B.

Seidel (H.) *Photographien aus Deutsch-Ostafrika.* (Globus, Braunsch., 1900, LXXVII, 186-191, 236-240, 269-272.) A number of photographs collected among the Wadja and Massai with explanatory remarks.—F. B.

Winslow (William C.) *The Progress of Egyptology.* (Am. Antiquarian, Chicago, 1900, XXII, 327-331.) Mentions recently published catalogues of Egyptian antiquities and reviews other books on the subject.—H. I. S.

Zaborowski (M.) *Sur l'origine des Malgaches.* (Bull. Soc. d'Anth. de Paris, 1899, 549-551.) The author discusses briefly, and without arriving at any final conclusions, the ethnic nature of the various tribes of Madagascar.—A. H.

ASIA

Baye (*Bureau de*). A propos des crânes provenant de l'assul ossète Nijni Koban. (Bull. Soc. d'Anthr. de Paris, 1899, x, 628-630.) The brief communication concerns two old skulls, obtained from a burial-tower in the country of the Ossètes, in Koban, and originally pronounced by Zaborowski as skulls of a Persian type. M. Baye in his last visit to the country procured information pointing to limited settlements of Persians in the Ossète district.—A. H.

Brunnhöfer (H.) Das Alter des Rig-veda, nach Maassgabe der Agyinau Hymnen. (Verh. d. Berl. Ges. f. Anth., Eth. u. Urgesch., 1900, xxxii, 80-85.) After discussion the author concludes that the origin of Brahmanism must have been earlier than 20000 B.C.—L. F.

Conradt (L.) Fundstätten und Bearbeitung des Nephrite in Ost-Turkestan. (Globus, Braunsch., 1900, lxxvii, 309-310.) Description of quarries and manufacture of nephrite.—F. B.

Davies (Llewellyn James.) The Chinese "Boxers." (Nat. Geog. Mag., Washington, 1900, xi, 281-287.) Describes "Boxers" as one of many secret societies in China. It was organized in opposition to the Manchoo dynasty and purports to be patriotic. The outbreak of 1900 was predicted several years before. China contains dense millions lacking training, making contemptible soldiers but possessing boundless powers of passive resistance.—H. I. S.

d'Enjoy (Paul.) Le respect des morts en Chine. (Rev. Scientifique, Paris, 1900, 4^e série, xiv, 305-307.) The author discusses some of various ways in which respect for the dead is shown in China, a country "where family life never dies but is eternal and is resumed in the concept of God, father of Earth and Water." The secret of the longevity of China, the wall that will defy all assaults, the real "Chinese wall" in fact, is the unity of the family, the primordial dogma of the country.—A. F. C.

Fradenburgh (J. N.) The deluge tablets. (Am. Antiquarian, Chicago, 1900, xxii, 295-300.) Describes discovery of clay tablets and some results of their study by Assyriologists.—H. I. S.

Hubbard (James M.) Problems in China. (Nat. Geog. Mag., Washington, 1900, xi, 297-308.) Discusses political situation, its cause and solution. Incidentally refers to Chinese characteristics such as intelligence of educated, contentment of frugal industrious masses, and resentment of outside interference. Says commercial and religious invasion is part of the progress of the world.—H. I. S.

Struck (Ad.) Die Königsgräber von Amassia. (Globus, Braunsch., 1900, lxxvii, 169-174.) Description, plans, and photographs of chambers cut into the rocks near Amassia which served as graves for kings or noblemen. These graves have been described by Strabo.—F. B.

Webster (Harrie.) China and her people—some reflections on their manners and customs, habits, and lives. (Nat. Geog. Mag., Washington, 1900, xi, 309-310.) Describes briefly the country, characteristic desire of the Chinese for education, physical appearance, conservative disposition, tendency to regard western methods as anarchistic, and opposition to machinery for fear of upsetting industrial equilibrium. Chinese said to be industrious, frugal, probably happy and good citizens in China. In subtlety of analysis they surpass other races. The Chinaman studies without regard for time philosophy, astronomy, etc.; has great business capacity, mechanical skill, and habit of building for all time. Mental capacity of educated class equal to the highest efforts of the best races. Illustrated.—H. I. S.

Zaborowski. Galtchas, Savoyards, Sartes et Uzbègues. (Bull. Soc. d'Anthr. de Paris, 1899, x, 698-724.) In this interesting dissertation M. Zaborowski deals mainly with the Galtchas and Tadjiks, two of the more important peoples of western Asia. He considers both of Taramian origin and thus allied to the European Celts, including the Savoyards, and Slavs, who descended from the same family and emigrated to Europe during the neolithic and bronze periods. The Galtchas, purer than the Tadjiks, are of moderately brachycephalic type, their nasal indices ranging from leptorhynic to mesorhynic and their orbital indices from microseme to mesoseme. Some mixture with the blond, dolicho-

Zaborowski—Continued.

cephalic type is apparent, particularly among the Tadjiks. The Sartes are a mixed people whose physical characteristics are not yet well determined. The Urbecs are characterized by a short head, a long, narrow face and leptorrhiny. They are "the descendants of a detached branch of Outgours, Euz Goos or Oguz." The Outgours were remnants of Huns and generically related to the original Ton-Kiou or Turks.—A. H.

Contribution à l'ethnologie ancienne et moderne du Caucase. (Bull. Soc. d'Anth. de Paris, 1899, x, 585-623.) The paper is based on the examination of M. Baye's collection of crania from old burial-places in the Caucasus, and the author dwells, in the beginning of his paper, very appropriately on the importance of such collections. There are very few data concerning the earliest inhabitants of the Caucasus. The best known ancient cemeteries date from about the commencement of the period of metal in that region; the numerous, often artificial cave-dwellings in certain parts of the Caucasus are more recent. Dolmens, yielding stone implements, but also objects of gold, iron, copper, bronze, coral, and glass, are found in the province of Koochan. Among the skulls examined, some showed the characteristic artificial deformation common to the ancient "macrocephals" of southern Russia and the Crimea. The undeformed skulls showed two types: the male skulls were principally dolichocephalic, microseme, and leptorrhynic, and the author identifies these with the race of Kymris, or "macrocephals." Some of the female crania presented the same type, but a number of others were distinctly brachycephalic and mesorrhynic and with higher orbits, and these the author believes to have been women of Asiatic descent, probably Medes, captured and held as slaves or espoused by the Kymris. Toward the end of his paper Zaborowski refers to the fact that the koorgan crania, from farther north, are also of the Kymric type, and that this type had thus far been found only in Europe, where it occurs in ancient as well as in modern times. The author's tendency is, it is evident, to consider this dolichocephalic, microseme, and leptorrhynic type as very ancient, if not autochthonous, in Europe.—A. H.

EUROPE

Anutachia (D. N.) Die Kurgankultur des Gouvernements Kostroma im 10. bis 12. Jahrhundert. (Globus, Braunschw., 1900, LXXVII, 335-338.) Extract of a Russian work on the koorgans of Kostroma.

Asmus (R.) Die Schädelform der alt-wendischen Bevölkerung Mecklenburgs. (Archiv f. Anthropologie, Braunschw., 1900, XXVII, 1-36.) Examination of forty-nine skulls from various finds in Mecklenburg. Extensive measurements, descriptions, and tables are given.—L. F.

Balliot. Tumulus de Perroquoy, près Langres (Haute-Marne). (Bull. Soc. d'Anth. de Paris, 1899, x, 630-638.) A description of a tumulus burial which yielded skeletons and numerous objects of metal from the Gallo-Roman period.—A. H.

Bartels (M.) Isländischer Brauch und Volksglaube in Bezug auf die Nachkommenschaft. (Zeitschrift f. Ethnologie, Berlin, 1900, XXXII, 52-86.) A careful and apparently trustworthy collection of folk-customs and beliefs regarding childbirth and the new-born among the Icelanders. The resemblances to continental beliefs are striking. It would be desirable to have the investigation extended along other lines.—L. F.

v. Buchwald (Gustav.) Ueberdauer primitiver Steinzeitkultur in der La-Tène-Periode. (Globus, Braunschw., 1900, LXXVII, 249-254.) Finds of primitive stone implements, together with implements of the La-Tène period in northeastern Germany. The author endeavors to interpret these finds as proofs of the persistence of "interglacial" man in late prehistoric times.—F. B.

du Chatellier (P.) Haches en pierre polie type de la Guadeloupe, recueillies dans le Finistère. (Bull. Soc. d'Anth. de Paris, 1899, x, 574-584, 3 figs.) The paper is a report on a number of "carabiform" axes of polished stone found in the department of Finistère, France. The axes are characterized by a broad groove which encircles their upper portion and served for the attachment of the handle. The implements are remarkably American-like in form, in consequence of which they are spoken of as "carabiform"; but, as

du Chatellier (P.).—*Continued.*

M. Capitan remarks in his discussion of the jasper, axes of similar shape have been found in Ireland, Sweden, Denmark, Greece, Troy, etc.—A. H.

Giglioli (E.) *Intorno ad alcuni strumenti litici recentemente o tuttora in uso nell' Europa.* (Archivio per l'Anthropologia, Firenze, 1899, xxix, 229-238.) Describes (with figures) stone hammers from Iceland, a pestle from Italy (closely resembling Polynesian and North Pacific American Indian specimens), calendaring-stones from the Isle of Wight, stone metal-polishers from various parts of Italy, stone plowshares, etc., from the Auvergne, stones and stone-recipes used for cooking purposes from Italy, etc., net-stones, etc. The article is an interesting contribution to the literature of "stone age survivals."—A. F. C.

Giuffrida-Ruggieri (Dr V.) *Dal paleolitico al neolitico. Una nuova pagina dell'evoluzione umana.* (Rivista di Scienze biol., Torino, 1900, II, 620-625.) This "new page in human history" is the establishment of a continuity between the so-called paleolithic and neolithic periods in Europe, in lieu of the "break" formerly supposed to exist,—in reality the demonstration of a continuity from the remotest epoch down to historical times. This has resulted from the recent investigations of many authorities, Piette in particular.—A. F. C.

Kortüm (F. W.) *Die Echternacher Springprocession.* (Globus, Braunsch., 1900, LXXVII, 307-301.) Originally intended for cure of diseases, such as chorea and epilepsy.—F. B.

Krebs (Wilhelm.) *Vorgeschichtliche Reste in den Niederbronner Bergen (Elsass).* (Globus, Braunsch., 1900, LXXVII, 243-245.) Description of ancient remains in Alsace.—F. B.

Kunze (F.) *Der Birkenbesen, ein Symbol des Donar.* (Internationales Archiv f. Ethnographie, Leiden, 1900, xiii, 81-97, 123-162.) A monographic study of the birch as a sacred tree, divided into three parts: (a) the birch as a tree sacred to the Thunder; (b) the birch twig in the Thunder cult; and (c) the birch broom as a symbol of the Thunderer. It is a quite exhaustive treatment with examples of folk-customs and lore and full references to the literature of the subject which

seems extensive. Especial acknowledgment is made to Mannhardt and Grimm.—L. F.

Laville (A.) *Fond de cabane gauloise de Monterran.* (Bull. Soc. d'Anth. de Paris, 1899, x, 641-643, 9 fig.) Enumeration of remains (pottery, objects of iron and bronze) found in a hut from the Gallic period.

— *Stations préhistorique et gallo-romaine du Mont-Aimé (Marne).* (Ibid., 677-679, 4 fig.) Notes on stone implements and potsherds of the neolithic and Gallo-Roman periods found on Mont-Aimé. The surrounding district abounds in neolithic remains.—A. H.

Oppert (G.) *Ueber die Entstehung der Aera Dionysiana und den Ursprung der Null.* (Verh. d. Berl. Ges. f. Anth., Eth. u. Urgesch, 1900, XXXII, 102-136.) Learned examination of authorities treating of date of birth of Christ and calendar construction, particularly with reference to the present discussion as to the date of the beginning of the twentieth century. States arguments for various points of view.—L. F.

Rhamm (Karl.) *Zur Entwicklung des slavischen Speichers.* (Globus, Braunsch., 1900, LXXVII, 299-294, 301-304, 320-323, 331-334, 332-335.) A comparative study of the forms of Slavic granaries leads to the conclusion that even before the separation of the present divisions of the Slavs the types of granaries of the western and eastern Slavs were different.—F. B.

Rivière (Émile.) *La lampe en grès de la Grotte de la Mouthe (Dordogne).* (Bull. Soc. d'Anth. de Paris, 1899, x, 554-563, 5 fig.) The author presents before the Paris Anthropological Society what appears to be a stone oil-lamp, recovered from the magdalenian deposit in the Mouthe cave. This cave is famous through the ancient engravings found on its walls. The external surface of the lamp shows an engraving of an animal head not unlike some of those in the cave. The presence of the lamp suggests that the petroglyphs in the dark cave were made by artificial light. The darkness of the cave and the former absence of indications of artificial lighting during the period from which the petroglyphs are supposed to date, had been used as an argument against the ancient character of the engravings.—A. H.

Schmidt (Emil.) Die Vertellung der Kopfformen in Europa. (Globus, Braunsch., 1900, LXXVII, 217-220.) Summary of Deniker's work on the distribution of the cephalic index in Europe.—F. B.

Schmit (Émile.) La Vigne aux morts de Loisy-sur-Marne. Fouilles d'un cimetière gaulois et gallo-romain. (Bull. de la Soc. d'Anthr. de Paris, 1899, x, 563-576, 8 fig.) A report of excavations in a burial-ground from the Gallic and Gallo-Roman periods. There were found characteristic modes of burial, as in other cemeteries of the same periods; and there were recovered numerous decorative objects and some weapons of bronze, iron, and copper. The excavations continue.—A. H.

Schneider (L.) Prähistorische Forschungen in Böhmen. (Verh. d. Berl. Ges. f. Anth., Eth. u. Urgesch., 1900, XXXII, 173-188.) Description of finds, chiefly osteological, in Bohemian caves. Conclusions not given.—L. F.

Schumacher (K.) Hünengräber. (Globus, Braunsch., 1900, LXXVII, 233-236.) A statement of the importance of systematic archeological investigation and a plea for governmental regulation of excavations.—F. B.

Tetzner (F.) Die Polaben im hannoverschen Wendland. (Globus, Braunsch., 1900, LXXVII, 201-207, 220-224.) Description, with illustrations, of an old Slavic district in Hannover, in which the Slavic language has been extinct for about a century.—F. B.

Tomasi (Paul.) Les mégalithes du sud-ouest de la Corse et les stations néolithiques de Grossa, canton de Sartène. (Bull. Soc. d'Anthr. de Paris, 1899, x, 532-539, 3 fig.) The paper is a report on megalithic monuments and neolithic deposits in the regions mentioned in the title. An interesting fact is mentioned in connection with the stone implements, particularly the stone axes: the people of the district attach the found axes to the necks of the cattle, believing they will preserve the cattle from disease; furthermore, among the peasants these old implements are employed as amulets and are believed to have magic healing

powers, but they help only him who has full faith in their efficacy.—A. H.

Träger (P.) Mittheilungen und Funde aus Albanien. (Zeitschrift f. Ethnologie, Berlin, 1900, XXXII, 33-51.) A preliminary study of the physical characteristics of the Albanians who have long been an ethnological puzzle. Previous literature is criticised and reviewed. Describes an old burial-ground and the contents of four graves. Ornaments found with the bones were of bronze and iron and not of very primitive type. Author does not venture conclusion as to age of graves or race of their makers.—L. F.

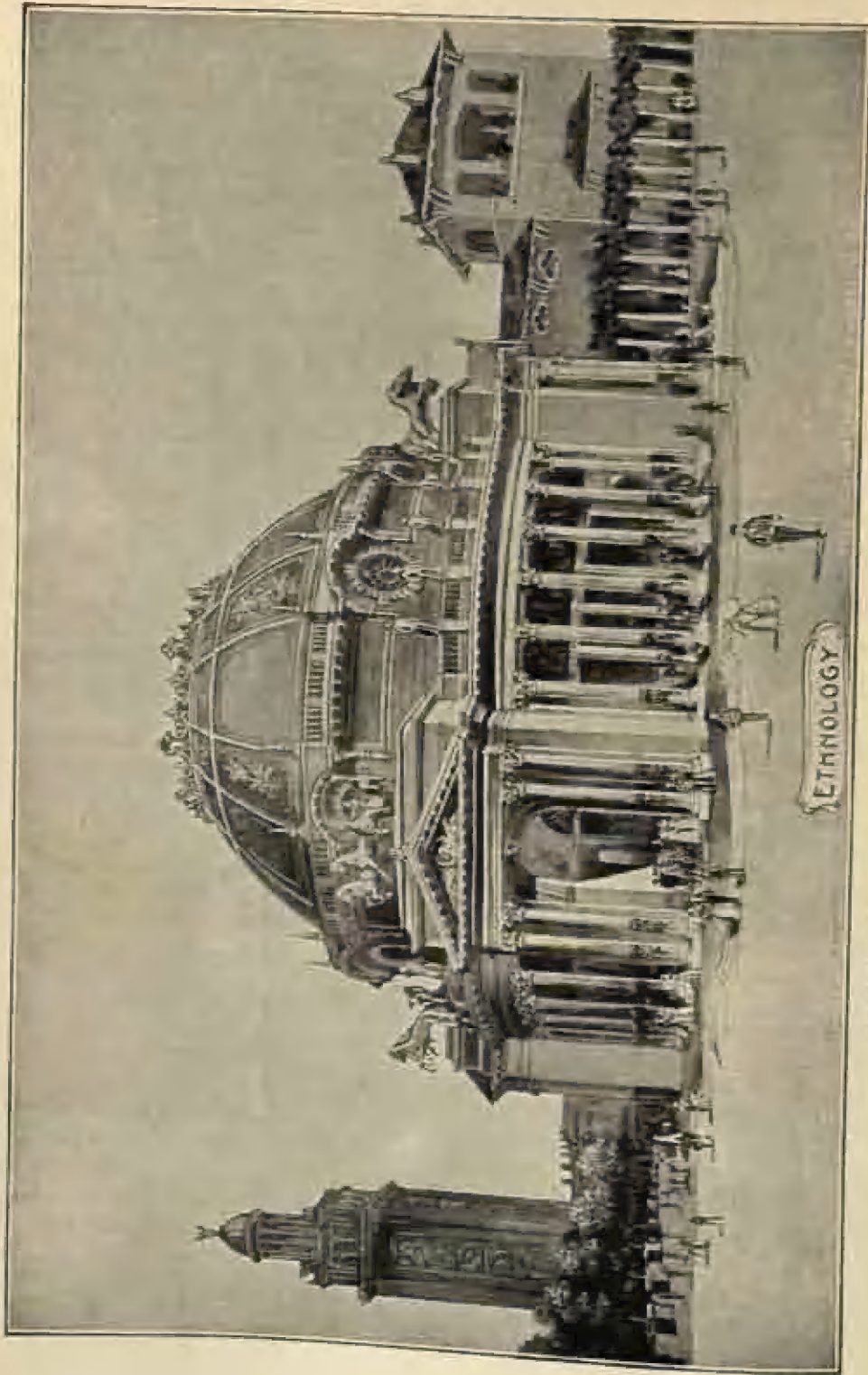
Variot (G.) Note sur le dolmen dit du Mont de Séne et sur quelques autres dolmens de la région voisine. (Bull. Soc. d'Anthr. de Paris, 1899, x, 653-657.) A description of a number of dolmens near Soutenay, in the département Côte-d'Or. Each dolmen consists of a large flat stone supported on vertical stones, and excavations in the same have yielded implements of stone and bone.—A. H.

Vauvillé (O.) Station gallo-romaine sur Pernant (Aisne). (Bull. Soc. d'Anthr. de Paris, 1899, x, 644-645.) Découvertes d'habitation non construite et d'objets de l'époque gallo-romaine sur Soissons. (Ibid., p. 646-650.) Notes on settlements and objects from the Gallo-Roman period.—A. H.

Weissenberg (S.) Beiträge zur Volkskunde der Juden. (Globus, Braunsch., 1900, LXXVII, 130-131.) A number of folk-songs of the Jews of southern Russia.—F. B.

— Jüdische Sprichwörter. (Ibid., 339-341.) Proverbs from the same source.—F. B.

Winter (A. C.) Die Vermählung des Kamins. (Ibid., 240-243.) Description of a Russian ceremony, in which food is sacrificed to the fire-place, and a symbolic marriage to the fire-place is celebrated. The author attempts to show how the ceremony may have developed from an ancient fire worship.—F. B.



THE ETHNOLOGY BUILDING FOR THE PAN-AMERICAN EXPOSITION OF 1893

NOTES AND NEWS

Anthropology at Baltimore.—The Anthropological Section of the American Association for the Advancement of Science held its usual winter meeting in Baltimore on December 27 and 28, 1900; and the interest of the assembly was enhanced by the concurrent meetings of the American Folk-Lore Society and of the American Society of Naturalists with its affines—especially the Association of American Anatomists and the American Psychological Society. The usual winter meeting of the Council of the American Association was also held in connection with the sectional meeting.

In the unavoidable absence of Prof. Amos W. Butler, chairman of the Section of Anthropology, the secretary, Prof. Frank Russell, of Harvard, presided. Other officers of the Section in attendance were W J McGee, Councilor, and Thomas Wilson, E. W. Scripture, Alice C. Fletcher, and J. Walter Fewkes, of the sectional committee. The Folk-Lore Society was represented by President Franz Boas and Permanent Secretary W. W. Newell, together with several members of the Council, notably, Anne Weston Whitney and Henry Wood, of Baltimore, to whose efforts much of the pleasure and success of the meeting must be ascribed.

The evening lecture, complimentary to Johns Hopkins University, the citizens of Baltimore, and the several societies, was anthropological; it was a succinct but vivid description of "The Indians of the Southwest," by Professor Russell, illustrated by stereopticon reproductions of a number of Vroman's splendid photographs.

Among the contributions to somatology was an illustrated paper by Dr Aleš Hrdlička, on the subject of albinism among the Hopi and Zuni Indians. The paper was based on a census and critical study of the albinos in several southwestern pueblos, made during the summer of 1900; the various characteristics of these albinos were described and compared with those displayed by similarly abnormal individuals among other known peoples; while the possible and probable causal factors were analyzed and weighed. Emphasis was given to the facts (1) that among the southwestern Indians albinism is not consistently hereditary, and (2) that in no known case was the subject the first-born of the family, and to the natural inference from these facts that the diminished

vitality expressed by the abnormality might be due to the combined burden of gestation and unduly prolonged lactation on the part of mothers. Professor Russell demonstrated a new apparatus for measuring the torsion of long-bones for use in somatologic comparisons; and Dr George A. Dorsey introduced useful somatic data in a paper summarizing the results of the McCormick expedition among the Hopi Indians.

Several of the communications before the American Psychological Association were of special interest to students of anthropology, as was also the presidential address before the Folk-Lore Society, by Dr Boas, on "The Mind of Primitive Man." This address appears in full in the current number of the Folk-Lore Journal; it emphasizes the essential similarity among the mentations of all mankind despite the minor—though oftentimes striking—differences attending diversity of environment and inequality of culture. The same general subject was touched in Professor Butler's paper before Section H, entitled "Results of some Observations among the Feeble-minded."

Contributions to esthetics were made by Professor Russell in a paper on Arizona pictographs, by Dr Fewkes in the exhibition of a collection of Hopi pictures, and by Miss Mary Walker Finlay Speers in a most attractive rendition of several negro folk-songs from Anne Arundel county, Maryland.

As usual, primitive technology received the lion's share of attention: Dr O. T. Mason presented an elaborate classic summary of the "Technique in American Indian Basketry," based on the material in the U. S. National Museum, notably the Hudson collection recently described in this journal; W. C. Mills exhibited and discussed the superb series of "Prehistoric Fish-hooks of the Baum Village Site" in Ross county, Ohio; Warren K. Moorehead, under the title "The Interpretation of Field Testimony, especially Concerning Village Sites," urged the importance of critical observation and full record of associations in archeologic work; and Harlan I. Smith followed with a series of interesting "Notes on the Archeology of Saginaw Valley, Michigan," and "Methods of Burial in British Columbia." The fish-hooks described by Mr Mills are of more than passing interest in that they represent a technologic type; all are of bone, and the series is sufficiently complete to illustrate every stage in a manufacturing process which was quite uniform throughout the district described. The material used was a plate of solid bone, usually taken from one of the long-bones of a bird or mammal of considerable size; this was first grooved longitudinally on both sides by rubbing or grinding; on the meeting of these grooves the perforation was enlarged by continued rubbing, while the exterior edges of the bony plate were also ground off, until the bone

assumed the form of an elongated link; then opposite sides of the link were filed through at such points as to yield two hooks, each having a shaft of two-thirds or three-fourths the length of the original link, and a proportionately shorter point; and this point was finally sharpened by further grinding. The several stages appear to attest the exclusive use of stone implements in the manufacture; and the type appears to represent a lower plane of ideation, and at the same time a more delicate manipulation, than the type of bone arrowpoint described by Putnam from other localities in Ohio, in which the initial process was perforation of a plate of bone, followed by the excision of a portion of the plate. In connection with the fish-hooks the same author exhibited an interesting series of photographs of bone arrowpoints, which seem to illustrate the symbolic development of these implements along lines already detected among the aborigines of northwestern Mexico; the favorite material for these appendages to the aborigines' swiftest messenger of destruction is the terminal portion of an avian wing-bone or a cervine leg-bone, so selected and shaped that the medullary cavity caps the wooden shaft of the arrow, while the tip is sharpened by grinding; accordingly the slightly wrought bone becomes nearly homologous with the sea-lion tooth of the Seri huntsman, though standing for a somewhat higher stage in emblemism.

A significant contribution to sociology was made by Dr Boas in a paper on the results of the recent work of the Jesup Expedition in northwestern America. The researches among the Kwakiutl Indians indicate a reversion from patronymic to matronymic organization during recent decades; and special inquiries were directed toward the discovery of the causes of this unusual—indeed abnormal—development. An apparently effective factor was found in diminishing population, since the maternal organization suffices for small groups while the paternal form is the better adapted to larger groups; and a factor of apparently even greater influence was found in the customs of inheritance of family fetishes and insignia, which represent jointly the house and the kindred, and hence appertain the more closely to the housewives and are handed down in the female line.

Various contributions to sophiology were made, both in the Anthropologic Section and in the Folk-Lore Society. Miss Fletcher's paper on "The Lazy Man in Omaha Indian Lore" illustrated the prevalence among the aborigines of that spontaneous and subconscious device for moral development represented in higher culture by the villain of the plot and the butt of recurring joke. In "An Interpretation of Pueblo Katsinas," Dr Fewkes entered deeply into primitive thought concerning the semi-sacred mysteries dominating the lowly mind, and

analyzed the functions of these objects as clan fetishes. Of related import was a paper by Dr Washington Matthews on "The Treatment of an Ailing God," in which that confusion between person and fetish besetting the primitive mind was vividly shown; the paper being of special interest—as was brought out in discussion—in that it tended to explain the belief of certain southwestern tribes (notably the Papago) that wounds inflicted on an enemy in battle will react in corresponding fashion on the warrior unless the reaction is forestalled by elaborate purification ceremonies. A communication on "Laleikawai, a Legend of the Hawaiian Islands," by Dr John Rae, was significant as an illustration of the approximate correspondence in intellectual development of the aborigines of Hawaii and North America; while various survivals of the primitive ideas in far higher culture were brought out in a paper entitled "Hair in Folk-lore," by H. E. Warner. Another sophiologic paper of note was entitled "Legends of the Slavey Indians of the Mackenzie River," by Dr Robert Bell.

Among the papers of more general character was one by Thomas Wilson on "Anthropological Congresses at the Paris Exposition of 1900"; and pursuant to the reading of this paper the Section formally authorized the appointment of a committee to take the requisite steps toward welcoming the Société des Américanistes to this country on the occasion of the prospective meeting of that body, for the first time on the soil of the United States, in 1903. Dr Smith also announced a recent movement toward the establishment of an archeologic survey in Michigan; and a committee of the Section was appointed to communicate with the prime movers in the matter, commending the movement and tendering coöperation.

On the whole, the Baltimore meeting was gratifying in the attendance of working anthropologists, in the interest of the papers presented, and in the fruitful and harmonious discussions elicited at every session. The meeting was especially noteworthy for the absence of those pseudo-scientific communications which tend to cluster about every branch of science in its formative period; and several of the communications well illustrated the comforting fact that anthropology is rapidly taking form as an organized body of knowledge no less definite than the older sciences.

W J MCGEE.

Frank Hamilton Cushing.—The tribute paid to the memory of Frank Hamilton Cushing at the 305th meeting of the Anthropological Society of Washington only recently came to my knowledge. I read it with deep interest and regretted not to have been present at the time to pay a tribute to my lamented friend. Knowing Cushing for several

years, and being for a certain period associated with his work, I learned to appreciate him fully as much as his American associates, and consider it my duty to pay a tribute, however late, to the memory of an old comrade and friend.

My acquaintance with Cushing dates from the summer of 1883. I met him first in Albuquerque, New Mexico, whither he had come, with a number of Zuñi Indians, from the "Tertio-Millennial Exhibition" in Santa Fé, en route for Zuñi. Since that sunny summer day in the Southwest till the news of his death reached me here in the Far East, my feelings toward him never changed. Cushing appreciated this. In his last letter to me he wrote: "It is rare, my dear ten Kate, for one to have friends who remain, as you have remained, quite the same throughout all changes, throughout years of silence, throughout days of ill repute." Yes, and if a little of the praise and credit given to Cushing after his death had been bestowed upon him during his lifetime, he would have been far happier and could have achieved still more than he did.

My own anthropological and ethnological researches led me to Zuñi, not long after our first meeting. There I saw Cushing—Tenatsali (Medicine Flower)—in his element. To copy from my book of travel the chapter I devoted to my stay at Zuñi and Cushing's work would occupy too much space in an article such as this, but those days when the *Kdkakshi* was in full swing, offering scenes of unvaried fascination, are the most interesting I spent during my long journey in the Southwest. I saw Cushing here an Indian among Indians, loved and revered by many, the ideal student of ethnology. I saw then—and I became still more convinced of it during my second stay at Zuñi—that Cushing was really a "Zuñi familiar." He helped me where he could with my investigations. He gave me freely and gladly all I wanted from the abundance of his knowledge. One of the things I most admire in Cushing was his eloquence in word and pen. Nobody could tell a Zuñi story or converse on ethnological or archeological matters with such ease, such facility of expression, such clearness.

On the second occasion of my meeting Cushing, in the late spring of 1886, I had returned to the United States from South America on account of my health, which necessitated my return to Holland. As soon as he heard of my arrival he invited me to Readville, near Boston, where he was the guest of Mrs Mary Hemenway at Old Farm. There I spent several delightful days. We talked of our previous meeting in 1883. He told me of his vicissitudes since then and of his plans for the future, I in turn relating my experiences in the primeval forests of Surinam, among the Arawak and Carib Indians.

In those days Prof. Edward S. Morse was preparing his paper on the

methods of arrow release. He came to Old Farm more than once to study the practice of archery with a Priest of the Bow. At Old Farm, too, I made the acquaintance of Mr Sylvester Baxter, of the *Boston Herald*, one of Cushing's staunchest friends, and whom I was destined to meet later when associated with Bandelier amidst the ruins of Los Muertos at Camp Hemenway.

After returning to Holland, letters from Cushing arrived recording enthusiastically the new work he had been enabled to begin through the liberality of Mrs Hemenway. He summoned me to join the expedition of which he was the leader. Ultimately I went, though only in the autumn of 1887 was it possible for me to leave Holland. For more than ten months I was privileged to share his work. I participated in his joys, his hopes, his sorrows. It was a life of continuous work, of fascinating interest. Many of the osseous remains and sundry specimens of the ancient Pueblo industry and art we dug out with our own hands at Los Muertos, Las Acequias, Halonawan, and various other places.

Dr Washington Matthews has recounted Cushing's achievements with the Hemenway Expedition. Let me add that at no period of my life did I learn more than in those days. I was taught to see and to interpret things through his eyes and reasoning. Had I not passed through the school of Cushing it would have been impossible for me in later years, in Argentina, to have comprehended certain obscure points in the ancient Calchaqui culture, which presents so many striking parallels with that of the Zuni or Shiwian. Moreover, I owe it to Cushing that I was enabled in 1887 to complete my former anthropological researches among the Pima Indians, to visit the Maricopa tribe with the same object, and to collect data from the Papagueria.

In July, 1888, the Hemenway Expedition came to Zuni. Cushing arrived there a few weeks later, after more than four years' absence. The Indians were delighted to have him in their midst again, most joyful among all being our honored friend Palowahtiwa. Tenatsali, equal to the occasion, resumed the old life as if he had not been away. It was the time of dancing, of religious ceremonies—the *Kdkokishi*, the performances of the *Newekwa*, the scalp dance, the sacred rabbit hunt, and much more,—a delight to the ethnologist,—but space forbids me to dwell on this subject. Our harvest of new discoveries was abundant. What Dr Matthews said is nevertheless true: that much information gathered in Salado valley and at Zuni was never made known; much that was written was possibly never published. If this be so, may it have been confided to faithful hands!

I cannot speak of Cushing's work in Florida. Our ways had by

this time long since diverged. But let me recall him here as he revealed himself in those days of common work, amidst the ruins, on the march, round the camp-fire,—not to speak of his many letters.

Cushing was not a savant, a man of much book-learning. The book in which he read was Nature. In his reading and interpretation of that great book he was a master, and as such achieved more than book-learning alone would have conferred on a mere scholar. Cushing was a leader, a *Bahnbrecher*, a man endowed with acute power of observation and quick perception very seldom to be seen in any profession. This was partly due to his artistic disposition and talents—he sketched admirably and modeled well.

Of his literary talents I need not speak, his brilliant style and the poetical language in which his thoughts were often clothed being known to all who have read his publications. Several of his works, in style, form, and scientific value, are masterpieces for all time.

Cushing was chivalrous by nature, possessing in large measure the highest form of courage—moral courage. He was solicitous for others, careless as to himself, especially in pecuniary matters, and displayed no trace of meanness or narrowmindedness. Like other men of genius Cushing had *les défauts de ses qualités*. To classify him psychologically in the terminology of August Strindberg I should call Cushing a happy, though rare, mixture of the *conscient* and the *illusionné*.

Twelve years have passed since I bade good-bye to Tenatsali and Zuiland. Vividly do I recall that bright morning when my steed bore me away forever, leaving him, cap in hand, waving me a last farewell. We never met again, but—as Mr Stewart Culin has said—I cannot think of him as dead. Tenatsali has gone “to that wild brotherhood to whom his heart went out,”—to the land of his longings and yearnings, beholding things with the clearness of the Ancients. Verily he went to lie down “to the sleep of fulfilment, fearlessly and well content.” And like the Zulis I do not forget that “the lightning is not dimmed by the darkness. It but gleams the more brightly. Even so it is with the souls of men in the night-time of death.”

H. F. C. TEN KATE.

NAGASAKI, JAPAN,

September, 1900.

Woven Basketry: A STUDY IN DISTRIBUTION.—For the purpose of classification, basketry may be divided into *woven* and *coiled*. Woven basketry is further to be separated into that with simple weft and that with compound weft; in either of these two the warp may be rigid or flexible, simple or compound. Basketry with simple weft is divided into checker, wicker, and diagonal, according to the comparative

flexibility of warp and weft and the number of the former crossed by the latter. Basketry with simple weft, either checker, wicker, or diagonal, existed in pre-Columbian times in every culture-province of the Western Hemisphere. Basketry with compound weft, sometimes called twined basketry, on the other hand, had a special and interesting geographic distribution.

In order to make the present inquiry plain, let it be understood that in twined basketry there are two or more weft elements, which make some fraction of a revolution around one another as each one passes over a warp element: if a plain two-ply twine is formed, the style may be called plain-twined weaving; if in the same technique two warps are crossed instead of one, and not the same two on the next round, it is called diagonal-twined weaving; if one weft element is rigid and the other wrapped around it and the warp, at their intersections, it may be called wrapped or bird-cage twine; if the warps are crossed by a horizontal and similar stem, and the twined weaving binds both of these together, the type is called *tee*; this style, so far as known, is confined to the Pomo Indians on Russian river, California. Where the twine is three-ply and one of the elements passes around a warp stem at each third of a turn, it is called three-ply twine. These three elements are now and then braided, in which case the Pomo call the weaving *chitsin* or three-ply braid. For the present designation, all of these compound wefts are twined basketry of some sort. It exists in the Eskimo area only on the borders of Bering sea. It commences with the island of Attu and continues down the Pacific coast of America to the borders of Mexico with some interruptions, and extends into the Great Interior basin with the Ute. Otherwise it does not exist in North America excepting in association with prehistoric pottery in Pope county, Tennessee, in Macon, Georgia, in Arkansas, and in Illinois, as may be seen by examining Holmes' illustrations in the *Third Annual Report of the Bureau of Ethnology*, pp. 408-413.

In the *Thirteenth Annual Report of the Bureau of Ethnology* Holmes gives many figures of twined weaving. Figure 1, from Hariot, appears to be a wattled or twined fish weir; figure *a* in plate 1 shows twined weaving; plates III to VIII, from caves in Tennessee, show twined weaving; figure *a* in plate VII shows diagonal weaving; however, this style has almost disappeared from the area east of the Rocky mountains in historic times. South of Gila river, in the southwestern portion of the United States, twined weaving seems not to have existed. There is not a specimen in the United States National Museum of any sort from Central or South America. In the codices, as well as in the beautifully illustrated books of Stübel, Reiss, and Uhle, not one example

contains this compound web. In other words, in my limited study, no twined weaving was ever done in America south of the present boundary of the United States.

O. T. MASON.

Etymology of the Name Aëta (Eta, Ita).—One of the collective names by which the Negritos of the Philippines are known is *Aëta*, concerning which term Brinton¹ observes: "Some say that this is derived from the Malayan *hëtam*, 'black,' and others that it is from the Negrito tongue, in which *aïta* means 'curly-' or 'woolly-haired.' I leave the point for others to decide." Blumentritt,² in his essays on the ethnography of the Philippines, suggests a relationship between *Atta* (*Ita*) and *Idayan*, the name of a Negrito language in northern Luzon; he compares also *Idan*, a collective name applied to some of the tribes (not clearly Negrito, however) of Palawan. Deniker³ accepts the view that *Acta* or *Aïta* is "a corruption of the Malay word *hitam*, meaning 'black.'" According to Schadenberg: "The Malayan natives term them *Aïtas*, said to mean in Tagal 'black,' i. e., 'the black man'; but *Aïta* has doubtless arisen as an original word of the Negrito language from *Eta*, and admits of no derivation from Tagal (that would be the same as if we were to translate *Mongol* with 'yellow' because the Mongols are the 'yellow' race)." Dr Schadenberg prefers the term *Etas*.⁴ Keane⁵ considers that "this term, which occurs in a great variety of forms,—*Aëta*, *Aïta*, *Atta*, *Ate*, *Eta*, *Ita*, etc.,—has in the Tagala language the meaning of 'black,' being cognate to the Malay *hëtam*." The view that *Atta* admits of no derivation from Tagal fails to recognize the fact that the Negrito languages of Luzon have many words in common with Tagal, and that in certain cases it is a fair presumption that the borrowing has taken place from Tagal to Negrito, and not vice versa. To this category may belong *Aëta* as a term for "black men," for it does not appear that its signification is "curly-haired" or "woolly-haired" originally, if at all, in the Negrito tongue. The radical for "black" is seen in Tagal *maitim*, "black," which seems to have passed into the Negrito dialect of central Luzon as *mairim*. The Tagal *maitim* contains the prefix *ma-*, a common adjectival particle, especially in color-words, etc. The rest of the word is cognate with the Malay *hëtam*, and argues for the derivation of *Aëta*, *Aïta*, *Eta*, from the Tagal language. It seems also that the term *Aëta* was first applied to the Negritos of Luzon, and

¹ "The Peoples of the Philippines," *Am. Anthropologist*, vol. xi (1898), p. 298.

² "Versuch einer Ethnographie der Philippinen," *Petermann's Mitth., Ergänz.*, No. 67 (March, 1882), p. 4.

³ *Races of Man*, London, 1900, p. 483.

⁴ "Ueber die Negritos der Philippinen," *Zachr. f. Ethnol.*, vol. xii (1880), p. 134.

⁵ *Ethnology*, Cambridge, 1896, p. 259.

that its general extension of meaning is more a matter of scientific than of folk thought. This again makes for the Tagal origin of the word. Another item worth mentioning here, perhaps, is that the island of Mindoro, where, doubtless, Negritos once dwelt, was in the sixteenth century known as *Mait*, a word which Beauregard¹ tentatively renders "country of blacks." The translation may be doubted, but the resemblance of the name to the term under discussion is at least striking. Altogether, the evidence seems to favor the connection of the *Ailu*-words with the Tagal term for "black," though there is always the possibility that a tribe-name resembling the Tagal word has been driven out by it.

ALEX. F. CHAMBERLAIN.

Hartman Central American Collection.—A correspondent of *Science* states that there has just been exhibited at Stockholm a fine collection of archeologic and ethnographic objects from Central America, made by Dr C. V. Hartman (formerly naturalist of the Lumholtz Expedition to northern Mexico) under the patronage of engineer Ake Sjogren. In a brief guide to the exhibition by Dr H. Stolpe, we are told that Dr Hartman began his researches in 1896 at Mercedes, where he discovered a large workshop for the manufacture of stone gods and other antiquities of unusual interest. Among those now exhibited are two standing figures of stone, the largest ever brought to Europe from Central America, which were erected at the eastern end of a large oval tumulus, about 300 feet in circumference, and covered with stone to a height of 22 feet. East of this was a rectangular court, walled with stone on three sides, with a cairn of about 90 feet in circumference and 12 feet in height at each of its eastern angles; and on the flat tops of these lay fragments of smaller statues. Afterward Dr Hartman went up to the high plateaux of the interior and investigated many cemeteries, especially those of Oroquieta, Chiricote (3000 feet above sea-level), Lemones, and Santiago. The graves were scientifically examined in a manner never before attempted in these parts, and a foundation was thus laid for a chronologic grouping of Central American antiquities. In all, over four hundred graves were opened, showing a typical stone-age culture; no weapon or cutting tool of bronze, still less of iron, was found. But though the majority of the graves were uninfluenced by European culture, proof was not wanting that in two cases cemeteries at Oroquieta and Mercedes were in use after the Europeans had reached the New World. In a grave at Oroquieta were found some mosaic glass beads, clearly of Venetian origin, and in a grave at Mercedes was a large bead of blue glass. Another valuable suggestion as to the

¹ "Aux Philippines," *Bull. Soc. d'Anth. de Paris*, 1887, p. 532.

chronology of the find is afforded by a clay bowl, found at Salvador, bearing Maya hieroglyphs which probably denote the number of a year according to their chronology, but which unfortunately has not yet been connected with that of the Old World.

Similar explorations were carried out in the Guanacaste peninsula on the Pacific coast, on the islands in the bay of Nicoya, and at Carrizal on the adjacent mainland. Dr Hartman then proceeded to Salvador, where for nearly a year he dwelt in one of the largest villages inhabited by the Pipilas, an Aztec tribe, devoting himself to the study of their manners, customs, and religious ideas. He also made an anthropometric examination of 100 Aztec individuals and took a number of photographs.

In Guatemala Dr Hartman visited the Cakchiquel, Zutujil, Quiche, and Xinka tribes, as well as the Huava on Cape Tehuantepec in southern Mexico. His notes on the language of the last two are of the greatest interest, inasmuch as there was previously no material for the classification of their tongue.

Preparation of Acorn Meal by Pomo Indians.—Acorns, buck-eye and weed seed (about twenty-five varieties), notably the tarweed (*Madaria*), also berries of some numbers of plants, especially manzanita (*Arctostaphylos*), madrona, wild rose, and mountain laurel, are staples among the Pomo and important in the order mentioned. *Teu-ni'*, bread, is made of any of the eight varieties of acorns; *nu-cl*, from *Quercus agrifolia*, and *tsupa*, from *Quercus densiflora*, are valued as the sweetest. The nuts are sun-dried, hulled, and reduced to flour by the stone pestle and basket mortar and frequent siftings. A shallow pit is made in fine sand and pressed smooth with the hands; the meal, mixed with a little salt, is poured in and covered with *Iris macrosiphon* leaves. Fresh water is then poured on in quantities and the meal stirred till it is thoroughly leached. Within an hour it can be gently lifted out in chunks. Another pit is prepared for the oven, in which a fierce fire is started. Stones the size of a smoothing-iron are thrown in, and, when very hot, half of them are taken out. The remainder form a griddle in the coals and are covered with wet oak and iris leaves, on which the dough—which is the acorn meal mixed with five per cent. of *ma'sil*, or red earth in solution, also sometimes the same amount of tarweed meal (*ma-kó'*)—is evenly spread. Wet leaves are placed over this, then the hot stones, and over all about six inches of earth. In six or eight hours the oven is opened, disclosing a big flat cake incrustated with leaves and smelling rather like bread. The *ma'sil*, or red ceremonial yeast, has given a dark red cast, while the *ma-kó'* turns it almost black. The

taste is *sui generis*, but not unpleasant. The salt used is gathered either on the coast or at a spring on Eel river.

Pinole (Spanish), or *to-o*, is a mush of acorn meal, leached, mixed with a percentage of other seed meals, and boiled in a *ti* or *hām-tūc* basket by dropping hot round stones into it till done. It has the consistency of mush, but is quite insipid. It is now often toasted in a basket plaque with live coals, then mortared into flour and cooked as above.

Other cakes are *ma-kō*, *ma-lul'-ka-to*, *bi-mu'*, etc., named from their constituents and the method of preparing. *Yu-hu* is a coarse, unpalatable cake made from the *Quercus wislizeni* acorn.

For buckeye (*di-sū'*) the nuts are roasted among hot stones, hulled, peeled with a deer-rib knife, mashed in a basket with a heavy billet like a giant potato masher (*di-sū'-pa-wo'-hai*), then leached as above and eaten hot or cold. It is of the consistency of paste, and is nutritious.

All the above-noted comestibles are of ancient origin.

J. W. HUDSON.

Frederick Max Müller, P.C., K.M., M.A., LL.D., D.C.L., the celebrated philologist, who died at Oxford on Sunday, October 28, was born at Dessau, Germany, December 6, 1823. He was educated in his native city and at Leipzig, later studying in Berlin and Paris. He was the recipient of many honors, being a member of the French Institute, a Knight of the Ordre pour le Mérite and the Maximilian Order, Commander of the Légion d'Honneur, and of the orders of the Northern Star, the Corona d'Italia, Albrecht the Bear, and the Medjidie. He was appointed Taylorian professor of modern languages at Oxford in 1854, and held the chair of Comparative Philology in that university at the time of his death. He became Curator of the Bodleian Library in 1856, Fellow of All Souls in 1858, Corpus Professor in 1868, delegate of the Clarendon Press in 1877, Hibbert Lecturer in 1878, and was Gifford Lecturer from 1888 until 1892. He was awarded the degree of Hon. LL.D. by the universities of Edinburgh, Cambridge, Bologna, Dublin, and Buda-Pesth. Among his noteworthy publications are: *Rig-Veda Samhitā* (6 vols., 1849-73; 2d ed., 4 vols., 1889-92); *Rig-Veda Samhitā*, Translated and Explained (vol. 1, 1869); 2d ed. *Sacred Books of the East* (1892); *Rig-Veda Pratishākhya*, das älteste Lehrbuch der vedischen Phonetik (1869); *Hitopadesa*, in das Deutsche übersetzt (1844); *Hitopadesa*, Text with Interlinear Transliteration, Grammatical Analysis, and English Translation (1866); *Meghadūta*, dem Kālidāsa nachgedichtet (1847); *Upanishads*, Translated from the Sanskrit, *Sacred Books of the East* (vols. 1 and xv, 1879, 1884); *Dhammapadam*,

Translated from Pali, *Sacred Books of the East* (vol. x, 1881); *Buddhist Texts from Japan* (1881-85); *History of Ancient Sanskrit Literature* (2d ed. 1859); *Sanskrit Grammar for Beginners* (2d ed. 1870); *India, What can it Teach Us?* (1883; new ed. 1892); *Kant's Critique of Pure Reason*, Translated (1881); *Introduction to the Science of Religion* (1870; last ed. 1882); *On the Origin and Growth of Religion*, Hibbert Lectures (1878; new ed. 1882); *Chips from a German Work-shop* (4 vols., 1867-75); *Selected Essays on Language, Mythology, and Religion* (2 vols., 1881); *Biographical Essays* (1884); *Lectures on the Science of Language* (1861-63; rewritten 1891); *The Science of Thought* (1887); *Biographies of Words and Home of the Aryas* (1888); *Gifford Lectures*, i. *Natural Religion* (1890), ii. *Physical Religion* (1891); *Anthropological Religion* (1892).

Tepoka-Cocopa Expedition. — A recent expedition sent out by the Bureau of American Ethnology has just brought its work to an end. The party outfitted at Phenix, Arizona, with four-mule wagon and saddle animals early in October, and proceeded southward via Gila Bend, Ajo, Santo Domingo, Quitovac, and Caborca, to the embouchure of the San Ignacio (or Rio Altar) sand-wash — i. e., to the eastern coast of the Gulf of California, in about lat. $30^{\circ} 30'$. The primary purpose of the expedition was to study the Tepoka Indians, a tribe or subtribe of the Serian stock reported to survive here so late as 1895; but the party were disappointed to find these aborigines entirely gone and presumably extinct, with their old range and watering-place occupied by a stock ranch. In view of these conditions, the object of the expedition was at once changed to a study of the Cocopa Indians, reputed to survive in large numbers about the head of the gulf. To reach their territory it became necessary to return to Santo Domingo and thence retrace the old Yuma trail, coinciding approximately with the international boundary, to Rio Colorado. The Cocopa Indians were found in considerable numbers on both sides of the river several miles above its mouth, i. e., in both Sonora and Baja California. Considerable collections were made of both objective and linguistic material, and a good series of photographs was obtained. Leaving the Cocopa country December 6, the expedition returned via the Colorado and Gila valleys, reaching Phenix in time to disband on December 14. The party comprised W J McGee in charge, with Delancey Gill as artist; during a portion of the journeyings Prof. R. H. Forbes, of the University of Arizona, accompanied the expedition, while John J. Carroll and James Moberly, both of Tempe, were attached throughout. There were also several temporary attachés, including Hugh Norris, Papago interpreter; Don

Aurelio Mata, Spanish interpreter; and Don Ramon Zapeda, interpreter and guide. The collections are already in the U. S. National Museum; a part of them will be used in preparing an exhibit for the Pan-American Exposition at Buffalo.

Pueblo Ruins in Kansas.—What may be regarded as a discovery of great interest has recently been made by Dr S. W. Williston and Mr H. T. Martin, of the University of Kansas, who have completed the excavation of a typical pueblo ruin in the valley of Beaver creek, Scott county, Kansas. The low mound defining the ruin was carefully and systematically uncovered, exposing an oriented structure 53 by 35 feet, the outer wall being built of stone cemented with adobe mortar and varying in thickness from 18 to 24 inches. The building contained seven rooms, the largest of which was 17 feet by 13 feet 9 inches, with a dais or platform, 6 inches high, on two sides. A representative Pueblo grinding-trough, 3 feet 9 inches by 2 feet 1 inch, was found in one corner of this chamber, and a characteristic fireplace, containing ashes, near the center. The walls and the floors were well plastered. No doors or other openings were found in the walls (which were only two and a half feet in height), ingress and egress having been had by means of ladders through hatchways in the roof, as attested by the remains of their uprights in the floor. Judging from the impressions of poles and osiers left in the fragments of adobe found on the floors, the roof of the building was constructed in typical Pueblo fashion. The implements unearthed consist of bone awls, scrapers, and fleshers, scapulæ of the bison serving for the latter. Stone drillpoints, mauls, arrowpoints, scrapers, and a small but well-executed incised pipe, together with numerous fragments of pottery, said to be of true Pueblo type, were also uncovered. The finding of the half of an iron ax or wedge in one of the rooms indicates that the group of dwellings has been occupied within the historic period. The smallest room measured 10 by 14 feet.

This discovery of what is unquestionably a Pueblo ruin hundreds of miles from the nearest village of the sort led the explorers to investigate the early Spanish history of the region, and in the report of their observations, recently published in volume vi of the *Collections* of the Kansas State Historical Society, several quotations are made from documents prepared between 1660 and 1778 which allude to the flight of the Taos Indians of the upper Rio Grande in New Mexico far eastward into the buffalo plains, where they constructed a fortified village known to the Spaniards as the Cuartelejo. The former existence of this Pueblo outpost has been known to students of southwestern history and ethnology

for a number of years, but not until the publication of the results of the investigations by Dr Williston and Mr Martin had its situation been known. That the identification is a correct one there seems to be no reasonable doubt; Pueblo architecture in Kansas is intrusive, the indigenes of this region having constructed only grass and earth lodges. The authors may be congratulated on their success in solving this interesting problem.

F. W. HODGE.

Anthropology in Australia.—Early in the summer, says *Nature*, a memorial was submitted to the governments of South Australia and Victoria, praying that facilities might be granted to Mr F. J. Gillen, one of the inspectors of aborigines, and Prof. Baldwin Spencer of the University of Melbourne, joint authors of the noteworthy work on *The Native Tribes of Central Australia*, for the continuance of their investigations into the habits and folklore of the natives of Central Australia and the Northern Territory. The memorial, which was signed by all British anthropologists and many prominent representatives of other sciences, has met with prompt and generous response. The government of South Australia has granted a year's leave of absence to Mr Gillen, and the government of Victoria has provided a substitute for Professor Spencer during his absence from Melbourne. Mr Syme, the proprietor of the *Melbourne Age*, has contributed £1000 toward the ordinary expenses of the expedition. The government of South Australia has also allowed the expedition to make use of the depots and staff of the Transaustralian telegraph for the forwarding and storage of supplies. The explorers start in February, 1901, and it may be confidently anticipated that, if the winter rains make conditions favorable for traveling, they will be rewarded with the same conspicuous success which attended their expedition of three years ago; although the task before them requires even greater tact, since the natives of the Northern Territory are more difficult to deal with than the aborigines of the center, who know Mr Gillen and regard him with the utmost confidence. The tribes of the MacDonnell ranges will be studied even more minutely than before, and afterward the explorers will go toward the Gulf of Carpentaria, along Roper river, and, time permitting, proceed down Daly and Victoria rivers.

Legend of the Klickitat Basket.—The Shade told the first weaver to weave a basket (*tookst*), so she repaired to the forest and pondered long over her mission. At last, gathering the plant *yi* (*Xerophyllum tenax*), squaw grass, elk grass, pine grass and the red-cedar roots, *noo-wi-ash* (*Thuja gigantea*), she began to weave, and after many, many toilsome days a basket was produced. She carried it to the lake

and dipped it full of water, but her heart was stricken with grief when it leaked, and the Shade said to her: "It will not do, weave again—a tight basket with a pattern on it." She sat by the waterside in despair, and as she looked down in the clear depths of the beautiful lake the pattern (*chato-timus*) was revealed to her in the refracted lines she saw; and with new courage she again repaired to the depths of the forest alone and worked until she wrought a perfect specimen of the most perfect type. Other women have learned the pattern all down the ages, but only very few are now left who can weave a perfect pattern and a perfect basket.

The locality where I recorded the story is Lummi island, Bellingham bay, Washington. The pattern referred to is similar to that shown in figure 289, page 199, of the *Sixth Annual Report of the Bureau of Ethnology*.

MRS R. S. SHACKELFORD.

Osage Indians in France.—I have read with much interest Miss Fletcher's account, in the April-June *Anthropologist*, of the visit to France in 1827 of a party of Osage Indians. She will perhaps be glad to know that a similar visit was actually paid at the French court by a representative of that tribe in 1724-25. The Jesuit priest Beaubois carried with him to Paris several Indian chiefs, belonging to the "Illinois, Missouri, Osage, and Ojibwa" tribes; a somewhat detailed account of their reception in France, with addresses made to them, and gifts presented to them, is reprinted from the *London Post Man*, Jan. 27, 1726 ("Upcott Coll., 1, p. 33, N. Y. Hist. Soc."), by the *U. S. Catholic Historical Magazine*, vol. III (1890), pp. 160-166. Mathurin le Petit also mentions the visit of these Indians to France in a letter to his confrère D'Avaugour, dated July 12, 1730; it is published in *Lettres édifiantes*, and reprinted in the Cleveland reissue of the *Jesuit Relations* (R. G. Thwaites, editor); see vol. LXVIII, pp. 203, 205, 213, and 215, and note 25; cf. also vol. LXVII, note 41. Le Petit says that among the Indian chiefs were Chikagon (apparently but a variant of our modern "Chicago") of the Mitchigamias, and Mamantouensa of the Kaskaskias.

EMMA HELEN BLAIR,

Asst. Editor of the *Jesuit Relations*.

Ethnology of India.—At the recent meeting of the British Association a committee was appointed to consider the following resolutions: "That in view of the opportunities of ethnographical inquiry which will be presented by the Indian census, the council of the Association be requested to urge the government of India to make use of the census officers for the purposes enumerated below, and to place photographers at the service of the census officers: (1) to establish a

survey of the jungle races, Bhils, Gonds, and other tribes of the central mountain districts; (2) to establish a further survey of the Naga, Kuki, and other cognate races of the Assam and Burmese frontiers; (3) to collect further information about the vagrant and criminal tribes, Haburas, Beriyyas, Sansiyyas, etc., in North and Central India; (4) to collect physical measurements, particularly of the various Dravidian tribes, in order to determine their origin; and of the Rajputs and Jats of Rajputana and the Eastern Punjab, to determine their relation with the Yu-echi and other Indo-Scythian races; (5) to furnish a series of photographs of typical specimens in the various races, of views of archaic industries, and of other facts interesting to ethnologists."

The Serpent Mound of Ohio, which has long been a subject of study and research for American archeologists, has been given by the Harvard Corporation to the Ohio State Archeological and Historical Society. The mound has been in possession of the Peabody Museum since 1886, when it was purchased by private subscriptions amounting to \$6000, chiefly from citizens of Boston. More than \$3000 has been expended in improvements, but the Harvard authorities reached the conclusion that the park should be under the control of Ohio people. Correspondence was opened with Mr Randall, of the Ohio society, who, after ascertaining that the society which he represents has the right to acquire such property, accepted the offer of the Harvard trustees. The conditions of the transfer require the society to maintain the mound and its surroundings as a public park, and to erect a suitable monument or tablet inscribed with the record of the preservation and the transfer of the property.

Anthropological Teaching.—The committee appointed by the British Association for the Advancement of Science to inquire into the present state of anthropological teaching in the United Kingdom and elsewhere has issued a circular setting forth the following inquiries: 1. Name of university, university extension, academy, institute? 2. Is there any systematic teaching of Anthropology or any of its branches, including Egyptology, Assyriology, and when established? 3. Names of teachers and their respective departments? 4. Details as to the nature of the teaching? 5. Is an anthropological collection available for teaching purposes? 6. What is the number of students, and is their number increasing? 7. Can a student take his degree or get his certificate or diploma in Anthropology? Prof. E. B. Tylor is chairman, and Mr H. Ling Roth (32 Prescott St., Halifax, England) secretary of the committee.

An Algonquian Series.—Mr William Wallace Tooker has prepared and Mr Francis P. Harper of New York will soon publish in handsome form "The Algonquian Series," consisting of ten essays, with ethnological and historical notes, as follows: 1, The Origin of the Name Manhattan. 2, Indian Names of Places in the Borough of Brooklyn. 3, The names Susquehanna and Chesapeake. 4, The Indian Names for Long Island. 5, The Algonquian Names for the Siouan Tribes of Virginia. 6, The Boocootawanaukes or the Fire Nation. 7, Some Indian Fishing Stations upon Long Island. 8, The Algonquian Terms Patawomeke and Massawomeke. 9, The Names Chickahominy, Pamunkey, and Kuskarawoke. 10, The Significance of John Eliot's Natick and the Name Merrimac.

Huxley Memorial Lecture.—To commemorate Huxley's anthropological work, the council of the Anthropological Institute of Great Britain and Ireland, according to *Nature*, has decided to found a public lecture, which will be called the "Huxley Memorial Lecture," and will be given annually at the opening of the winter session of the institute. The first Huxley lecture was delivered by the Right Hon. Lord Avebury, F.R.S., on November 13, in the lecture theater of the Museum of Practical Geology, Jermyn Street, S.W., which, as the scene of so much of Huxley's most impressive teaching, was felt to be the most appropriate place for such a ceremony, and has been placed for the occasion at the disposal of the Anthropological Institute.

A So-called Aboriginal Tool.—Among ethnological objects in collections from the northern California coast tribes is the pump-drill. This implement was introduced in Ukiah valley by a Spaniard in the early seventies, and was carried into Potter valley about the year 1876 by "Old Blind George," still living. The aboriginal drill was called *da-wi-hai* (*da-wi*, to bore; *hai*, a stick), and consisted of a straight wooden shaft half an inch in diameter at the middle. The drillpoint was of jasper or flint, triangular, fastened to the shaft by a lashing of hemp (*Apocynum cannabinum*), and coated with pitch. Its origin is beyond tradition. It was twisted between the open hands.

J. W. HUDSON.

MINOR NOTES

A MONTHLY RECORD of the progress of anthropological science is about to be established by the Anthropological Institute of Great Britain, and will appear under the title of *Man*. Its contents will include contributions to physical anthropology, ethnography, and psychology; the study of language, and the earlier stages of civilization, industry,

and art; and the history of social institutions and of moral and religious ideas. These various branches of study will be treated more fully in proportion as they are less adequately provided for in existing periodicals. Special note will be taken, throughout, of investigations which deal with the origins and the earlier stages of those forms of culture which have eventually become dominant, and of the races among which they have arisen and developed.

PROF. EDGAR L. HEWETT, of the New Mexico Normal University at Las Vegas, has issued a *Syllabus of Lectures on Anthropology* and also a *Syllabus of Lectures on the Prehistoric Archeology of New Mexico*, for 1900-1901. The latter series will embody, in part, the results of the investigations conducted by the author during the last five years in the region lying between the Rio Grande on the east, the Jemez mountains on the west, the Rito de los Frijoles on the south, and Santa Clara cañon on the north. This area comprises the Pajarito tract recently withdrawn from sale or settlement under the public land laws, with a view of making it a permanent national park.

THE SEMITIC MUSEUM of Harvard University has recently come into possession, through the gift of Dr Edward Everett Hale, of a collection of Egyptian antiquities consisting of bronze, stone, and terra-cotta statuettes, vases, and lamps, collected by Dr Hale's brother, Mr Charles Hale, while United States Consul in Egypt.

THE CHILDHOOD SOCIETY offers prizes of two guineas and one guinea for the two best essays on some prescribed subjects referring to the mental and physical characteristics of children. Information can be obtained from the Honorary Secretary of the Society, 77 St Margaret Street, London, W., England.

DR NICOLAS LEÓN has been appointed aid in charge of the recently established Section of Anthropology and Ethnography in the Museo Nacional at the City of Mexico. The work outlined by Dr León includes a Bibliography of the Anthropology of Mexico and an Indian linguistic map of that country.

IN HIS annual report to the Secretary of the Interior, Governor Murphy of Arizona recommends the appointment of a commission for ethnological and archeological research within that territory, and that suitable appropriation therefor be made by Congress.

PROF. FREDERICK STARR, of the University of Chicago, has been awarded a silver medal by Queen Wilhelmina, of Holland, in acknowledgment of an anthropological collection sent by him to the National Museum of Holland.

THE DEATH is announced of Miss Margaret Stokes, a distinguished Irish archeologist and author of numerous antiquarian works.

PROF. ALEXANDER F. CHAMBERLAIN has been promoted to the position of Acting Assistant Professor of Anthropology in Clark University at Worcester, Massachusetts.

MR GEORGE VANDERBILT is defraying the expenses of an expedition to Java by Mr David J. Walters, of New Haven, who proposes to search for remains of *Pithecanthropus erectus*.

THE ARCHBISHOP of Michoacan, Mexico, has recently established a professorship in the Seminario de Morelia for the teaching of the Tarascan language.

THE COMMITTEE ON PUBLIC LANDS has favorably reported to the House of Representatives a bill introduced by Mr Lacey providing for the Cliff-dwellings National Park in New Mexico.

PROCEEDINGS OF THE AMERICAN ETHNOLOGICAL SOCIETY

DECEMBER 14, 1899, TO DECEMBER 10, 1900

The American Ethnological Society was founded in 1842, and for many years thereafter held frequent meetings and did much to stimulate interest in the subjects which were its particular care, in New York and vicinity. With the death of many of its earliest members, and particularly of Albert Gallatin, to whom it mainly owed its origin, its meetings became fewer and its interest waned. The society's organization, however, has always been kept intact and occasional meetings have been held in recent years. With the rapid growth of anthropological work in New York during the last five years the need of some active society to further these interests has been increasingly felt. An informal organization known as the Anthropological Club was formed in 1897, composed of men actively engaged in anthropological pursuits, who met from time to time during the winter for the reading of papers and the discussion of topics of mutual interest. In 1898 the New York Academy of Sciences recognized the importance of the subject and the Section of Anthropology and Psychology was organized with monthly meetings. The necessity of some society more exclusively devoted to anthropological interests than the Academy being still felt, the members of the Ethnological Society and the Anthropological Club met, and after a full discussion the latter organization was merged in the former and with the beginning of 1900 the American Ethnological Society, with revised constitution and enlarged membership, resumed once more an active career with the prestige to which, by its age, it was entitled. With the active coöperation of the American Museum of Natural History, whose authorities have given the Society every assistance, the membership was increased largely, and monthly meetings are now held of such a nature as to promise well for the future success of the organization. Of these meetings three are held jointly with the Section of Anthropology and Psychology of the New York Academy of Sciences, and it is planned to give three public lectures each year under the auspices of the Society, which shall be of more general and popular interest than the technical papers read at the regular meetings.

The proceedings of the Society follow :

December 14, 1899

A special meeting of the American Ethnological Society was held at the American Museum of Natural History, with Prof. A. S. Bickmore in the chair in the absence of the President of the Society, Dr. Charles E. West.

The minutes of the last meeting were read and approved. Mr. Morris K. Jesup, the President of the American Museum of Natural History, expressed through the chair his interest in the Society and offered the full coöperation of the Museum in advancing its interests.

After a report from the Librarian, Dr. A. Woodward, relative to the deposit of the books, papers, and specimens of the Society in the library of the Museum, a resolution was passed making the Museum the permanent depository of such property of the Society. The Society then proceeded to consider the question of reorganization and, by invitation, Dr. Franz Boas, representing the Anthropological Club, addressed the meeting on the need of regular and active meetings of an anthropological character and spoke of the work and aims of the Anthropological Club.

Following Dr. Boas, remarks were made by several members, and upon motion the members of the Anthropological Club were formally elected members of the Society.

Meeting adjourned.

ANTHONY WOODWARD, *Secretary pro tem.*

December 19, 1899

A special meeting of the American Ethnological Society was held at the American Museum of Natural History, with Prof. A. S. Bickmore in the chair. The chair read a letter from the President of the Society, Dr. West, in which he requested to be relieved from his office as president. The minutes of the last meeting were read and approved. The resignation of Dr. West was accepted with regret and he was elected an honorary member of the Society.

A committee consisting of Prof. F. W. Putnam, Mr. A. E. Douglas, and Gen. James Grant Wilson was appointed by the chair to present nominations for officers for the ensuing year. After a recess this committee reported the following nominations: President, Morris K. Jesup; First Vice-President, James Grant Wilson; Second Vice-President, Franz Boas; Corresponding Secretary, Marshall H. Saville; Recording Secretary, Livingston Farrand; Treasurer, Frederick E. Hyde, Jr.; Librarian, Anthony Woodward; Members of Executive Committee, James Grant Wilson, Franz Boas, and Frederick E. Hyde, Jr.

The names as read were unanimously elected.

Professor Bickmore was appointed a committee to inform the President and Trustees of the American Museum of Natural History of the action of the Society with regard to the permanent deposit of the books and other property of the Society with the Museum.

The Society then adjourned subject to the call of the Executive Committee.

ANTHONY WOODWARD, *Secretary pro tem.*

January 12, 1900

A meeting of the American Ethnological Society was held at the American Museum of Natural History, with Gen. James Grant Wilson in the chair. Minutes of the last meeting were read and approved.

On behalf of the Executive Committee, Professor Boas presented the draft of a revised constitution, recommended for adoption, as follows:

CONSTITUTION OF THE AMERICAN ETHNOLOGICAL SOCIETY

ARTICLE I

Name.—This Society (established Nov. 19, 1842, by Albert Gallatin, John Russell Bartlett, George Folsom, Alexander I. Cothical, Francis L. Hawks, Theodore Dwight, Jr, Edward Robinson, Charles Welford, William W. Turner, Thomas Ewbank, Henry R. Schoolcraft, Alexander W. Bradford, John L. Stephens, and Frederick Catherwood) shall be called the AMERICAN ETHNOLOGICAL SOCIETY.

ARTICLE II

Objects.—The objects of this Society shall comprise inquiries into the origin, progress, and characteristics of the various races of man.

ARTICLE III

Members.—The Society shall consist of Members, Fellows, Corresponding Members, and Honorary Members. All classes of Members shall be elected by the Society upon recommendation of the Executive Committee. The affirmative votes of two-thirds of the Members and Fellows present shall be necessary to elect a candidate.

Fellows shall be chosen from among the Members resident in New York or vicinity, in virtue of scientific attainments or services. Corresponding Members shall consist of persons resident at a distance from New York, and chosen in virtue of scientific attainments or services. Honorary Members shall be chosen in virtue of distinguished services.

ARTICLE IV

Dues.—The annual dues of Members shall be Ten Dollars. Members contributing at one time One Hundred Dollars shall be known as Life Members, and shall thereafter be exempt from annual dues.

Any Member contributing at one time Five Hundred Dollars shall be known as a Patron.

The annual dues of Fellows shall be Five Dollars.

Corresponding Members shall be exempt from the payment of dues.

Honorary Members shall be entitled to all the privileges of the Society without payment of dues.

ARTICLE V

Officers.—The officers of the Society shall consist of a President, two Vice-Presidents, a Corresponding Secretary, a Recording Secretary, a Treasurer, and a Librarian, who shall be elected annually by ballot at the first meeting in every year. Members and Fellows shall be eligible to vote and hold office. Seven Members shall constitute a quorum for the transaction of business.

ARTICLE VI

Executive Committee.—The President and Recording Secretary, ex officio, and three other Members to be elected annually, shall constitute an Executive Committee for the transaction of business committed to them, and for general oversight and charge of the business affairs of the Society. This Committee shall report at each regular meeting.

ARTICLE VII

Meetings.—The meetings of the Society shall be held monthly, from the month of October to April, inclusive, at such time and place as shall be determined by the Executive Committee. Three of these meetings shall be public meetings, for which special preparation shall be made, and to which persons specially interested in Ethnology shall be invited. The Executive Committee shall be charged with the necessary arrangements for these public meetings.

ARTICLE VIII

Amendments.—This Constitution may be amended by a vote of three-fourths of the Members present at any regular meeting, provided notice of such proposed amendment or amendments be given at a previous meeting.

After remarks by various members of the Society the revised Constitution was adopted.

On recommendation of the Executive Committee the "*American Anthropologist*" was adopted as the official organ of the Society.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

January 31, 1900

A meeting of the American Ethnological Society was held at 226 West 58th street, with Gen. James Grant Wilson in the chair.

Minutes of the last meeting were read and approved.

On recommendation of the Executive Committee the following persons were elected members of the Society: Charles F. Cox, Seth Low, Henry F. Osborn.

A communication from the American Museum of Natural History referring to the deposit of the property of the Society in the Library of the Museum was read and ordered on file.

Dr A. Hrdlička presented a paper on DIVISION OF THE PARIETAL AND OTHER CRANIAL BONES IN MAN AND MAMMALS.

The paper dealt with the description, explanation of the mode of occurrences, and demonstration of divisions of various cranial bones. Five classes of divisions were demonstrated: these were: 1, The result of fractures. 2, Partial divisions resulting from mechanical obstruction in the course of the developing bone. 3, Normal partial divisions found in early life (embryo and new-born) and due to the mode of ossification of the bones. 4, Partial primarily normal divisions, persisting because of a delayed union of the original segments of the bones; and 5, Anomalous divisions due to a complete non-union of the original segments of the bones, as well as the divisions of class 4, may be associated with an abnormal multiplicity of the original segments of the bone.

Class 1—Divisions due to fracture occur not infrequently in both man and animals. When not recent, these divisions can be and actually have been mistaken for normal or abnormal sutures.

Class 2—These divisions occur in man occasionally in connection with the parietal foramen; more frequently in connection with the foramen ovale or spinosum on the sphenoid; and commonly in superior maxillæ in connection with the infraorbital foramen. They are very frequent in the parietal and temporal bones in the mammals, particularly in herbivora.

Class 3—These divisions are common in the older human embryos and the new-born; they also occur, but more rarely and not with the same relative frequency, in the same locations in the older embryos or new-born of various mammals. One of the most constant and prominent of these marginal divisions is the "parietal incisure" of Broca, situated near the posterior third of the median border of the parietal bone. Other more constant and prominent of these incisures are found in the sphenoid and mastoid angles of the parietal bone, above the mastoid angles of the same, in the anterior part of the squama, etc.

Class 4—Found frequently in the human new-born in the middle of the posterior border of the parietal and later in life in the malar, temporal, and occipital bones. Also in apes and monkeys, particularly in

or near the middle of the anterior border of the parietal. Rare in lower mammals.

Class 5—The typical instances of divisions of this class can be observed in man in the separation of the superior portion of the occipital and in the complete horizontal division found occasionally in the parietal. The divisions of the frontal bone must also be attached to this category. Divisions of the malar bone or temporal squama are other examples. Complete divisions of the parietal—horizontal, oblique, and vertical—occur in apes and particularly in macaques. Divisions of this class are very rare in the lower mammals. New instances of divisions of this class are reported by the author in a chimpanzee (bilateral division of the parietal); macaques (various divisions and multiplicity of segments of the parietal); a separation of the mastoid angles, bilateral, in a Peruvian human skull; division of both malars in an orang, of one malar in a white female and a Peruvian male skull, and a bilateral division of the temporal squama in a Peruvian.

Prof. Franz Boas presented a paper on THE INTERPRETATION OF SUN MYTHS.

Myths referring to the heavenly bodies, and particularly referring to the sun, are found almost all over the world. Many of these are similar to traditions in which the heavenly bodies are not mentioned. The question then arises whether it is justifiable to interpret myths of the latter class as developed from sun myths. If this interpretation is justifiable, we shall conclude that a great many traditions found all over the world are derived from sun myths. A detailed discussion of a series of sun myths, based largely on the distribution of traditions in North America, was taken up, and it was shown that a great many features found in them did not originally belong to these myths. From this the conclusion was formed that the incidents of a sun myth cannot, without critical examination, be considered as a primitive interpretation of natural phenomena, but that purely human or animal traits are introduced into sun myths. From this the speaker concluded that myths that do not refer to the sun must not be interpreted as sun myths, unless proof of their historical development can be given.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

February 21, 1900

A public meeting of the American Ethnological Society was held at 326 West 58th street, with Gen. James Grant Wilson in the chair.

On recommendation of the Executive Committee the following new members were elected: James M. Constable, Frederick S. Dellenbaugh,

William E. Dodge, Abram S. Hewitt, Collis P. Huntington, Oswald Ottendorfer, William C. Schermerhorn, William C. Whitney.

General Wilson then addressed the meeting, giving a brief historical sketch of the Society. After stating the considerations which prompted the founding of the Society, the speaker outlined its subsequent career and closed with interesting reminiscences of Albert Gallatin and others of the early members.

Dr Livingston Farrand followed with an illustrated lecture on PRIMITIVE DECORATION. The problems of the evolution of design were stated, and descriptions of the decorative art of certain savage peoples were given and examples shown.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

March 19, 1900

A meeting of the American Ethnological Society was held at the American Museum of Natural History, with Prof. Franz Boas in the chair.

The minutes of the last meeting were read and approved.

On recommendation of the Executive Committee the following gentlemen were proposed for membership and unanimously elected: A. Jacobi, Berthold Laufer, Henry G. Marquand, Carl Schurz, Henry Villard.

On recommendation of the Executive Committee the following members were unanimously elected Fellows of the Society: Franz Boas, J. McK. Cattell, Livingston Farrand, F. H. Giddings, G. B. Grinnell, S. T. Hagar, A. Hrdlička, A. L. Kroeber, Berthold Laufer, Carl Lumholtz, G. H. Pepper, F. W. Putnam, M. H. Saville, H. I. Smith, J. R. Swanton, A. Woodward.

On motion of Professor Putnam, General Wilson was requested to prepare a suitable memorial on the death of the late President of the Society, Dr West, to be spread upon the minutes. This was done as follows:

DR CHARLES E. WEST, for several years President of the American Ethnological Society, his successor being Morris K. Jesup, Esq., was born in Worthington, Massachusetts, 23 February, 1809, that famous year that gave to the world Lincoln, Gladstone, Tennyson, and many other great heirs of fame. He was graduated from Union College in the class of 1832. From the law and from medicine, for both of which professions he was regularly qualified, Dr West turned his attention to the higher education of women. In 1839 he became Principal of Rutgers Female Institute. He remained at the head of this institution

twelve years, and mapped out a plan of college work for women which was the precursor of the course at Wellesley and Vassar. In 1851 Dr West took charge of the Buffalo Female Seminary, and nine years later became Principal of the Brooklyn Heights Seminary. He continued at the head of this institution until 1889, when advanced age compelled his retirement from active work.

Dr West was elected a Fellow of the Royal Antiquarian Society of Denmark in 1849, and was a member of the American Philological, the New York Historical, and the Long Island Historical Societies, also of the Century Club and other associations. He possessed literary and art collections of high value. His literary treasures include a complete set of Anglo-Saxon works of the fifteenth and sixteenth centuries, and special collections of the bibliography of art. His collection of etchings and engravings was said to be one of the finest in this country. Dr West also possessed a rich collection of the ancient wares of Japan, gathered by Charles L. Sanderson by permission of the Mikado, and rare specimens of early Grecian, Roman, Egyptian, and Peruvian art, together with a collection of Jewish, Grecian, and Roman coins.

Dr West died of pneumonia, after a brief illness, at his home in Brooklyn, N. Y., 9 March, 1900, in his ninety-second year. Funeral services were held two days later in the Church of the Pilgrims, and the burial was in Pittsfield, Mass.

J. G. W.

The Executive Committee reported that it had been decided to hold the public meetings of the Society on the second Wednesdays of the months in which the meetings fall, and the technical meetings on the second Mondays so far as this may be possible.

Dr Berthold Laufer then read the paper of the evening on *EXPLORATIONS AMONG THE AMOOR TRIBES*. (Dr Laufer's paper has appeared in full in the *American Anthropologist*, Vol. 2, No. 2, pp. 297-338.)

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary*.

April 11, 1900

A public meeting of the American Ethnological Society was held in the library of the American Museum of Natural History, with Gen. James Grant Wilson in the chair.

On recommendation of the Executive Committee the following gentlemen were elected to membership: Edward D. Adams, James H. Benedict, Hermann H. Cammann, R. Fulton Cutting.

On recommendation of the Executive Committee Frederic S. Lee and C. W. Mead were elected Fellows of the Society.

Mr Marshall H. Saville then gave the lecture of the evening upon *EXPLORATIONS IN MITLA, MEXICO*, illustrated with stereopticon views.

Mr Saville's lecture was descriptive of his recent researches and discoveries on behalf of the American Museum of Natural History.

The Recording Secretary offered the following resolution on the death of Frank Hamilton Cushing, of the Bureau of American Ethnology, which was adopted and ordered spread on the minutes :

Resolved : That the American Ethnological Society has learned with profound regret of the death of Frank Hamilton Cushing whose contributions to North American ethnology have been of the highest value and have gained for him the widest recognition.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

April 23, 1900

A meeting of the American Ethnological Society was held in connection with the Section of Anthropology and Psychology of the New York Academy of Sciences at 12 West 31st street.

Dr Livingston Farrand spoke on RECENT RESEARCHES IN CENTRAL AUSTRALIA, calling attention to certain points of particular significance in Messrs Spencer and Gillen's book, *The Native Tribes of Central Australia*, which appeared last year. Special emphasis was laid on the suggested origin of the religious side of totemism as indicated in the 'Intichiuma' ceremonies of the Arunta tribe, which apparently are directed solely toward the end of increasing the supply of the totem animals and plants of the district, each totem group being charged with the treatment of its own totem object and its multiplication for the benefit of the other members of the tribe. The well-known prohibition against killing and eating the totem seems to hold in this region, but tradition and ceremony point to a time when this was not the case. This economic explanation of the custom is the first satisfactory one yet offered and is plausible for the tribes under discussion, even though it may not hold for other parts of the world. The social aspect of totemism with its marriage regulations still remains a problem.

The second paper was presented by Dr Franz Boas on the subject THE ESKIMOS OF CUMBERLAND SOUND.

The material on which this paper was based was collected by Capt. James Mutch. A full version was given of the myth of the creation of land and sea animals, and a description of the beliefs of the people in regard to souls and in regard to a series of heavens and underground worlds which are the abodes of the deceased. A number of taboos were described, and their explanation as given by the Eskimos was stated. They believe that the transgression of a taboo prescribed after

the death of an animal causes the transgression to become fastened to the soul of the animal, which goes down to the mistress of the lower world, where the transgression makes the hands of the deity sore. This enrages her, and she causes famine and misfortune of all kinds.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

October 22, 1900

A meeting of the American Ethnological Society was held in connection with the Section of Anthropology and Psychology of the New York Academy of Sciences at 12 West 31st street.

The meeting was given up to reports by members of field work undertaken during the summer.

Prof. Franz Boas described his operations on Vancouver island in connection with the Jesup North Pacific Expedition, mentioning particularly discoveries regarding the language and early customs of the Kwakiutl Indians. Dr Livingston Farrand spoke of his work for the Villard Expedition in western Oregon, particularly among the Alsea and the Athapascan tribes of that state and also of researches in Washington for the Jesup Expedition among the Yakima and Quilleute. Dr A. Hrdlička described an expedition to the Apache undertaken for the American Museum of Natural History for the collection of physical measurements and general ethnological information. Prof. F. W. Putnam gave a brief report of observations on the cliff-dwellings of Arizona and also of his investigations concerning the famous Calaveras skull in California. Prof. R. E. Dodge also spoke of researches made by him with regard to the Calaveras skull.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary.*

November 10, 1900

A public lecture was given before the American Ethnological Society and invited guests by Prof. Frederick Starr, of the University of Chicago, on THE INDIANS OF SOUTHERN MEXICO, at 12 West 31st street. Professor Starr gave an interesting popular account of his travels in southern Mexico during recent years, describing the physical characteristics and customs of the various tribes among which he worked, and illustrated his remarks with stereopticon views made from photographs taken by himself.

LIVINGSTON FARRAND, *Recording Secretary.*

December 10, 1900

A regular meeting of the American Ethnological Society was held at the American Museum of Natural History, with Gen. James Grant Wilson in the chair. The Executive Committee reported on its action since the last regular meeting and its action was confirmed. On recommendation of the Executive Committee Mr Raymond Harrington was elected a member and fellow and Miss Elizabeth M. Hyde a member of the Society.

The paper of the evening was by Prof. Franz Boas upon *EXPLORATIONS ON VANCOUVER ISLAND*.

During the summer of 1900 the speaker visited Vancouver island in order to carry on investigations for the Jesup North Pacific Expedition. His work was directed mostly toward a study of the language and industries of the Kwakiutl Indians. He described in some detail the peculiar methods of work in stone and the highly developed methods of woodwork found among these people. The art of the Kwakiutl Indians he described as similar to the art found in northern British Columbia, the geometrical form of ornamentation which is so common to most primitive people being entirely lacking in this era. Inquiries into the social organization of the tribe emphasized the previous discovery of the transitional stage from paternal to maternal institutions and of the recent development of the present clan system. Belief in magic and witchcraft is very widely spread among the tribe, and several specimens used for the purposes of witchcraft were shown.

Meeting adjourned.

LIVINGSTON FARRAND, *Recording Secretary*.

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First Vice-President, James Grant Wilson.
Second Vice-President, Franz Boas.
Corresponding Secretary, Marshall H. Saville.
Recording Secretary, Livingston Farrand.
Treasurer, Frederick E. Hyde, Jr.
Librarian, Anthony Woodward.

Members of the Executive Committee { James Grant Wilson,
Franz Boas,
Frederick E. Hyde, Jr.

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f = Fellow; *l* = Life Member; *p* = Patron; *h* = Honorary Member.

- | | |
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| Avery, S. P. | Kahnweiler, W. S. |
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| Björkstén, Theodor | Laufer, Berthold (<i>f</i>) |
| Boas, Emil L. | Lee, Frederic S. (<i>f</i>) |
| Boas, Franz (<i>f</i>) | Loubat, Duc de |
| Brickner, S. M. | Low, Seth |
| Cammann, H. H. | Lumholtz, Carl (<i>f</i>) |
| Cattell, J. McK. (<i>f</i>) | Marquand, Henry G. |
| *Constable, James M. | McCurdy, George G. (<i>f</i>) |
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| Cutting, R. Fulton | Mead, C. W. (<i>f</i>) |
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| Dennis, Warren E. | *Ottendorfer, Oswald (<i>l</i>) |
| Dodge, William E. | Pepper, George H. (<i>f</i>) |
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| Hewitt, Abram S. | *Villard, Henry |
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| Huntington, Archer M. (<i>l</i>) | Whitney, William C. |
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| Huntington, George S. | Woodward, Anthony (<i>f</i>) |
| Hyde, B. T. B. | Woodworth, Robert S. |
| Hyde, Clarence M. | |

* Deceased.

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